Dynamics of Financial Structure Adjustments and Firms' Financial Performance

By

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Please take certificate from Eng. Khalid and past here

DEDICATION

This dissertation is dedicated to my beloved family whose prayers always pave the way to success for me.

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ABBREVIATIONS

CPs	Commercial Papers
DCs	Domestic Companies
GMM	Generalized Method of Moments
ISE	Islamabad Stock Exchange
KSE	Karachi Stock Exchange
LBO	Leverage Buy outs
LSE	Lahore Stock Exchange
MBO	Management Buy Outs
MNCs	Multinational Companies
OTC	Over the Counter Market
SBP	State Bank of Pakistan
SECP	Securities and Exchange Commission of Pakistan
SIC	Standard Industrial Classification
SMCs	Single Member Company
SMEs	Small and Medium Enterprises
TFCs	Term Finance Certificates
TSLS	Two-Stage Least Squares

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ABSTRACT

This longitudinal study is an empirical investigation into the financial policy of Pakistan's non-financial corporate sector over a thirteen year period starting from 1999 to 2011 by using panel data methodologies. Most significant capital structure theories can be grouped into two broader categories, namely Pecking Order Theory and Tradeoff Theory. The Pecking order theorists believe that firms follow an order of preference for one source of finance over other sources. Tradeoff theory predicts that firms adjust their capital structure on the basis of underlying costs and benefits of the debt and equity capital. Firms optimize their capital structure by balancing marginal cost with the marginal benefit of the debt. Panel data regressions were applied in a systematic way to test the impact of speed of adjustment on financial performance. The empirical results indicate that the size of the firm, profitability, collateral value of assets, firm specific interest rate, non-debt tax shield, spontaneous finance and short term solvency are the significant determinants of the target capital structure. The Size of the firm, the collateral value of asset and short term solvency have a positive relationship with the target capital structure. On the other hand, profitability firm specific interest rate, non-debt tax shield and spontaneous finance has negative relationship. Growth opportunities have positive but statistically insignificant relationship with contractual debt to asset target ratio and positive and significant relationship with Long term debt to asset and total debt to asset target ratios. The results show that the adjustment speed towards target capital varies across industry and over time. The speed of adjustment is affected by the macroeconomic and firm specific factors. Results also indicate that volatile inflation and higher interest rates impedes the adjustment speed. Banking sector performance, GDP growth rate and distance to target capital structure accelerates the speed of adjustment. It is also found that closer the firms are to their target capital structure by speedy adjustments better the financial performance. Speed of adjustment has a significant effect on the financial performance of Pakistan's corporate sector. The results are consistent with the other international studies with ignorable differences.

CHAPTER NO.1

INTRODUCTION

This study is an empirical investigation into the financial structure decisions of firms from diverse perspective ranging from the estimation of target capital structure parameters, estimation of dynamic adjustments toward target leverage, factors affecting adjustment speed and Impact of adjustment speed on the financial performance in the corporate sector of Pakistan. The empirical analysis pursued all listed non-financial public companies of Pakistan during the period 1999 to 2011.

1.1 OVERVIEW

Capital structure studies attempt to elucidate the financing patterns and their implications for business firms. Capital structure issue has been heavily debated and widely researched in the last few decades. Owing to its significance and inherited complexity the issue has got considerable attention of the finance scholars. Practitioners always pose great concern about the issue as the capital structure decision is one of the most significant financial decisions (e.g., Brennan, 1995; Matsa, 2010; Graham and Leary, 2011). The growing interest of the researchers and practitioners in this imperative financial issue has made this stream of finance a specialized area of research.

A comprehensive and testable theory of capital structure which can be supported by statistical model and empirical evidence is still awaited. From the beginning scholars have been striving hard to explain, how firms should effectively formulate financial policy to finance their operations and growth opportunities efficiently and effectively (e.g., DeAngelo and Masulis, 1980; Titman and Wessels, 1988; Bradley, Jarrell and Kim, 1984; Harris and Raviv, 1991; Lemmon and Zender, 2010; Joeveer, 2013). A major portion of finance literature has been dedicated to

discussing this most critical business decision. Notwithstanding, all endeavors by finance scholars to explain this critical business decision, the issue is still not clear and thoroughly understood.

With the advent of every new theory the issue of capital structure has become more complex and difficult to understand. Complexity of the issue has rendered no choice to the scholars except to refer capital structure as a puzzle. The apparent reason of this increasing ambiguity is the fact that every theorist highlights a new dimension of capital structure decision and gives birth to new questions. According to Mayers (2001) there is no universal theory of capital structure, all proposed theories of capital structure are useful to understand the nature of decision under certain conditions. No-one single model or theory exists to incorporate all those conditions and dynamics. Barclay and Smith (2005) also documented more or less same conclusion that existing theories of capital structure focus on just one aspect of capital structure, either the existing capital structure (which they referred as *"stock"*) or the restructuring decision (which they referred as "*flow*"). They suggested simultaneous understanding of the target capital structure and the underlying strategy to achieve those targets is imperative to solve the capital structure puzzle.

Starting from the capital structure irrelevance theory proposed by Franco Modigliani and Merton Miller (1958) to the latest developments the whole journey is full of adventures and setbacks. The major milestones in the history are Trade-off Theory (Modigliani and Miller, 1963) and Pecking Order Theory (Mayer, 1977). The proponents of MM theorem believe that capital structure and dividend policy has no observable and predictable impact on the value of firm and therefore has no relevance to the market value of the firm (e.g., Chirinko and Singha, 2000; Chen, 2004; Strebulaev, 2007; Feld, Heckemeyer and Overesch, 2013). Tradeoff theorists hypothesized that capital structure is a deliberate decision, by optimizing leverage on the basis of cost and benefits of debt yields incremental gain of value. This school of thought establishes the existence

of optimal capital structure which firms strive to achieve over the long run. The advocates of the pecking order theory hold the view that firms have an order of preference for different sources of financing. Firms make financing decisions on the basis of preferred and feasible sources of financing (e.g., Frank and Goyal, 2003; Zoppa and McMahon, 2002; Fan, Titman and Twite, 2012). All the competing arguments and counter theories have made capital structure a puzzle. It is strived to test in case of Pakistan if the firms have any predictable target capital structure and how firms adjust to that target in presence of economic challenges generally faced by the developing countries.

The work of the theorists provides insights for understanding decision making patterns of a rational economic man in predictable ordinary situations. The real world is not static; every day different new situations emerge and make the situation more complex and diversified. Conventional wisdom is that environmental factors shape the preferences and affect the cognitive process of the decision makers on one side and bring new opportunities and threats to the other end (Yang, 2013). Financial environment is changing constantly and bringing new opportunities as well as challenges for the corporate managers. Therefore, one static theory seems impossible to explain such a complex financial decision. The required details and explanations of the contemporary financial environment and the role of global economic framework are difficult if not impossible to incorporate in a single theory (Kayo and Kimura, 2011). Therefore, it is important to study the corporate financing decisions in the particular financial environment before generalization of any model or theory.

Corporate financial management is about three major decisions; first acquisition of organizational resources (investing decisions), second raising funds to acquire the assets and conduct the operations of the business (financing decisions), and third management of

organizational resources. All the decisions are made to maximize the wealth of the existing owners of the business. Fisher's Separation Theorem asserts that firm's investment decisions are independent of financing decisions, therefore investors' investment preferences do not affect the firm's value. The three financial decisions are treated and analyzed separately as devised by the Fisher's Separation Theorem, but all three types of decisions are directly or indirectly articulated with each other. Imbalance of any element may results corporate level aggregate loss (e.g., Milne, 1981; Agrawal and Mandelker, 1987; Brennan, 1995; Hovenkamp, 2009).

The financing decisions are most important and complex of all major financial decisions and also considered the web of all business decisions (e.g., Bogan, 2012; Rampini and Viswanathan, 2013; Campello and Giambona, 2013). Finance managers can raise funds from multiple sources including various types of debt and equity. Every individual source has its own unique risk return attributes. In line with portfolio theory, the combination of various finance sources yields different results. When financing decisions are made particular source of finance not only evaluated individually, but aggregate analysis is also needed. Normally firms use and have to use a mix of various sources of financing in their capital (Voutsinas and Werner, 2011). In common discourse, the proportion of debt and equity in the total capital of the firm is called capital structure. The proportion of short term debt long term debt and the equity is known as financial structure. The proportion of the long term debt and equity in the total capital of the firm is referred to as capital structure. Financial strategy if properly formulated and implemented can provide a competitive advantage and contribute greatly to the achievement of financial goals of the firms by reducing the cost of capital (e.g., Fernandez, 2013; Miles and Marcheggiano, 2013). The Cost of capital is a prime consideration in all financial decisions. The Cost of capital is normally taken as the weighted average of the cost of all sources of capital including debt and equity sources. The

proper blend of debt and equity, which is referred to as optimal capital structure is the central point of the whole debate of capital structure. No-one theory of finance could succeed to develop consensus among the scholars about this hypothetical optimality. One of the possible reasons for this gap may be the inability of existing models to quantify underlying socioeconomic cost and benefit associated with debt financing (e.g., Fan, Wei and Xu, 2011; Cheng, Ioannou and Serafeim, 2014; Agrawal and Matsa, 2013).

1.2 IMPLICATION OF FINANCIAL STRUCTURE

It is now a common wisdom that developments in the Information and Communication Technologies have significantly changed the dynamics of the world. Where technological developments have brought new opportunities and operational efficiencies in doing business, it also has intensified the competition by making customers more knowledgeable. Only those firms can survive in this cut throat competition, which are thoroughly efficient in all areas of business decisions ranging from product design to financial decisions. The firms now days put more emphasis on reducing costs of doing business by various means. The Cost of business can be grouped into three major categories, production cost, operating cost and financial costs. One of the most significant areas of efficient utilization of business resources is optimal utilization of capital. A proper mix of debt and equity reduces the cost of doing business. Firms strive to achieve this optimality by designing the financial structure in an efficient way. Firms having distance from the optimality may not perform better than their efficient counterparts (Öztekin and Flannery, 2012; Camara, 2012).

Debt as a source of financing has its own advantages and disadvantages (Brigham and Houston 2011). The advantages of deploying debt in the capital structure include tax shield and debt as a control mechanism for agency problem which exists between the shareholders and the

management. The list of disadvantages of debt financing is a bit longer than the advantages, but the magnitude of specific advantage and disadvantage is a subjective matter and is difficult to establish any stance. Disadvantages include cost of financial distress also called bankruptcy cost, agency cost which exists between creditors and management, financial inflexibility, cost of information asymmetry and added cost for lack of redeploy-able assets (Fan, Titman and Twite, 2012). Balancing the capital structure for optimal utilization of capital is the biggest challenge as well as an opportunity to outperform. The practitioners are, therefore, interested to know how firms should make financial policy in order to achieve their financial goals.

1.3 RESEARCH GAP

The capital structure is subject to many antagonistic claims of theorists. The major contestants are tradeoff theorists, pecking order theorists and the proponents of the market timing theory. All three major schools of thought have incongruousness over how firms compose their capital mix. Underlying assumptions of existing capital structure models and theories hold true only in developed economies where capital markets are complete and efficient. Very little is known how corporations made financing decisions in developing countries where they have fewer financing choices. Therefore it is important to empirically investigate the prophecies of such theories before generalization in the developing countries.

Most of the extant literature of capital structure related to Pakistan is about estimation of capital structure determinates through static models (see e.g., Shah, Hijazi and Javed, 2004; Hijazi and Tariq, 2006; Shah and Khan, 2007; Rafiq, 2008; Ilyas, 2008; Ahmed, Ahmed and Ahmed, 2010; Ahmed and Wang, 2011; Afza and Hussain, 2011; Memon, Bhutto and Abbas, 2012; Shaheen and Malik, 2012; Saleem, et. al., 2013; Ahmad and Zaman, 2013). A bit different to aforementioned studies Ahmad, Fida and Zakaria (2013) tried to estimate the co-determinants of

the capital structure and the stock returns. There are few studies which have tried to study the impact of financing decisions on the financial performance of the firm. For instance, Saeed and Badar (2013) tried to study the impact of financial structure on the financial performance of the firm in food industry. They applied linear model on the five years data of 10 companies. It is an established fact that financial performance is an explanatory variable of the capital structure therefore the cause and effect relationship modeled by the scholars is questionable. Similarly, Mumtaz, et. al. (2013) strived to prove the cause and effect relationship between capital structure and financial performance through ratio analysis without any proper methodology. Bokhari and Khan (2013) also attempted to assess the impact of various capitals structure ratios on the financial performance of the firm through simple OLS method. They tested the relationship with the static models and contended to establish that capitals structure has impact on the financial performance of the non-financial sector of Pakistan. In a recent study by Sheikh and Qureshi (2014) investigated the impact of tax shield and profitability keeping size and collateral value of asset as control variable. They applied simple linear regression to find out the impact. The matter of the fact is that their model relationship is no different than the equations used for estimation of determinants of capital structure. Khalid (2010) claims to capture the dynamics of capital structure in response to financial reforms. However their model does not support their claim. They regressed one period lagged explanatory variables with the leverage ratio in presence of industry dummies.

In capital structure research the differences related to methodological issues are intense compared to the objectivity of capital structure (Haung and Ritter 2009). A holistic research covering all aspects of financial policy of the firm including determinants of target capital structure, adjustment speed and effectiveness of financial policy does not exist to date, especially in the context of developing economies.

No any comprehensive research study with reference to Pakistan could be found which answer the questions like how leverage targets are set by companies in Pakistan. How effectively do they achieve those targets in the presence of economic impediments peculiar to developing countries? It was unclear that what factors reliably important in the adjustment process to reach the target level. No any research till date clearly embark that how the adjustment towards target affect the financial performance of the firm.

This study aims to fill the gap in literature by providing comprehensive and robust analysis of determinants of target capital structure and speed of adjustment toward target leverage. This holistic empirical pursuit addresses all aspects of financial policy step by step starting from the determinants of target capital structure, estimation of adjustment speed, determinants of adjustment speed, and to the effectiveness of the adjustment. This multitier study addresses issues of high significance in a systematic way, the results of one tier serves the foundation of another tier. The gradual development of the argument goes to logical end with conclusive and summarized evidence of the effectiveness of the whole debate. It provides a comprehensive description of the financing decisions and the factors which help or restrain the firms to achieve their target capital structure. The results of this research provide an opportunity to argue about the strength and efficiency of the financial system of Pakistan. Extensive firm level dataset for all industries for thirteen years has been used in this study. A comprehensive set of variables have been identified by extensive review of literature. All the variables have been tested with the largest set of data. Such a huge panel dataset has provided the robust results. By means of dynamic model estimation techniques wider coverage of capital structure decisions is reported.

1.4 RESEARCH MOTIVATIONS:

Compared to developed countries, capital markets in developing countries like Pakistan are incomplete and inefficient (Maddison, 2013; Desai, Foley and Hines, 2004; Chuhan, Claessens and Mamingi, 1998). Capital markets in developing countries are not capable to cater the financing needs of the business; therefore, firms have to rely on the banking sector for funding growth opportunities and operations. In developing economies firms face different economic challenges therefore financial decisions are not directly comparable to the corporate sector of developed economies. The prominent theories assume the financial environment of developed economies. Those theories cannot be generalized to developing economies without due diligence. In developing countries firms face more capital related issues than developing countries due to limited financing options. No any significant research study could be found which address important aspects of the capital structure issue of Pakistan.

1.5 RESEARCH QUESTIONS

This study indirectly addresses the question, how efficient the financial system of Pakistan to facilitate the firms to adjust their capital structure to the target level and the capital structure adjustments are effective. This study explores the factors which affect the adjustment speed and impact of adjustment speed on financial performance.

Specifically, this research answers the following questions:

1) What factors are reliably important to determine target (desired) capital structure?
2) How do frequently Pakistani firms adjust their capital structure towards target capital?
3) What are the determinants of the adjustment speed of capital structure?
4) What is the impact of adjustment speed on firms' financial performance?

1.6 RESEARCH OBJECTIVES

The study aims to provide more robust results and comprehensive coverage of the factors which affect capital structure decisions of the firm. Based on the dynamic model developed by the Banerjee, Heshmati, and Wihlborg (1999), also called BHW model, this study explores the dynamic adjustments in the capital structure of the Pakistani firms, the speed of adjustment towards target level of the capital structure and its impact on firms; performance. The focus of this research is an adjustment towards the target capital structure. The specific objectives of the study are to:

1. To estimate the determinants of the target capital structure and the adjustment speed towards target capital structure of non-financial corporate sector of Pakistan.
2. To empirically investigate the factors which help the firms to achieve their target level of capital and the impact of speed of adjustment on the financial performance of Pakistan's corporate sector.

1.7 SIGNIFICANCE OF THE STUDY

The comprehensive discussions on effectiveness of financial policy in context of financial environment of the country would enhance our understanding about the corporate financing. This study also has many practical implications for the corporate sector of Pakistan, in general and non-financial sector specifically. The results of this study would help the industry to signify the efficient use of debt by timely adjustments in capital structure in response to changing financial environment in order to be financially effective. The study also addresses the economic environmental forces affecting the financial policy that how these factors impede the firm's financial restructuring ability. This study would supplement the policy formulation with relative economic rational. Since, it evaluates the role of financial environment in the speed of capital

structure adjustment towards the optimal level. The impact on the financial performance of firms has also been reported in the light of the prevailing economic conditions.

Capital structure research is mostly done with respect to the developed economies. In developed economies markets are relatively more complete, thus firms have more financing opportunities and their cost of optimizing the capital structure is comparatively lower than developing economies. It is not logical to generalize the results of research studies conducted in developed economies to the developing economies like Pakistan. This research is the first of its kind in Pakistan to the best of author's knowledge. It is more comprehensive in terms of depth, scope and implication than any research on capital structure conducted in Pakistan. It also provides ample analysis and coverage of capital structure decisions by discussing the results of different industries.

1.8 RESEARCH CONTRIBUTIONS

This study has contributed to the finance literature in three different ways. First, the study has empirically investigated the issue of capital structure with a holistic approach ranging from estimation of target capital structure to impact of capital structure adjustment speed toward target on the financial performance of the firm in a developing country i.e. Pakistan. This is the first study to the best of author's knowledge which investigate the capital structure of non-financial corporate sector of Pakistan with dynamic model. Thus, the estimation techniques and methodology of this research captures the dynamics of the capital structure of non-financial sector of Pakistan and its financial implications for the firm. Second, the study also has assessed the impact of volatile financial environment on the capital structure adjustment speed and offered some useful solution to the corporate sector of Pakistan. Dynamic tradeoff theory postulates that firms adjust their capital structure to reach at an optimum level, however, it fails to predict that financial environment

affect the adjustment process. This study attempts to enhance our understanding that how macroeconomic factors affect the adjustment speed towards target level. Third, the impact of adjustment speed on the financial performance of the firms operating in volatile financial environment, a common attribute of developing countries, is has never been researched. This study also attempts to assess the role of adjustment speed on the financial performance of the non-financial corporate sector of Pakistan.

1.9 ORGANIZATION OF THE DISSERTATION

Chapter 2 is a brief account of corporate sector of Pakistan. It describes the corporate sector and the financial markets of the country to give a country context in which the study has been conducted. Chapter 3 reviews the relevant literature. This review is organized in accordance with the significant theories. Since the MM theorem of irrelevance to the latest developments the whole debate revolves around the optimal level of debt and equity. Major theories of capital structure and the diverse perspectives of capital structure are discussed in this chapter. Chapter 3 examines the methodology and draws upon the statistical models to achieve the objectives of the study for maximum effectiveness of intended empirical investigation. Chapter 4 is an empirical investigation by using the panel data of Pakistan's corporate sector from 1999 to 2010. This chapter is comprised of various statistical analysis and model application. Data analysis is done to test the relevance and reliability of the data and the application of proposed model for this study. Chapter 5 sets out explanation of the various analysis and debate is carried out from the different perspectives on the relationship of target capital structure and the actual capital structure which is referred to as capital structure adjustment speed. This debate leads toward the conclusive statements about the dynamics of capital structure adjustments of Pakistan's corporate sector. The last chapter concludes the debate and provides the recommendation in the light of results and discussions.

CHAPTER NO.2

FINANCIAL ENVIRONMENT AND CORPORATE SECTOR OF PAKISTAN

This chapter is an overview of the corporate sector of Pakistan and the financial environment in which the corporate sector is operating. All economic activities are affected by the financial environment. The formal and informal institutes of a country determine to a large extent the success or failure of the firm (Peng, Wang and Jiang 2008). For understanding and analyzing the financial decisions it is pertinent to understand the environment in which those decisions are made. It is well documented in almost all disciplines of social sciences that the environmental factors affect the decisions and financial decisions are not exception. There is not even a single reason to believe that financial decisions like capital structure can be made without considering the contemporary financial environment (Grinblatt and Titman 2002).

2.1 FINANCIAL ENVIRONMENT OF PAKISTAN

Analogous to the changes in social behaviors of individuals due to globalization the financial behavior of individuals and institutions have also affected. It cannot be repudiated by any logic that strong networks, information flood and new cheapest means of communication have changed the financial system of the world (Alexander, 2006). The developments in the field of Information and Communication Technologies have changed the financial world dramatically. Great changes have been witnessed in the last two decades in the function and organization of financial markets. The traditional economic boundaries have blurred in recent past. The virtual markets have become a reality and growing exponentially (Castells, 2011). Investors can execute transactions from around the globe to any place by using modern communication means. Firms now have more financial liberty to access international capital markets conveniently and cost effectively. All these developments in the financial world require reiteration of the theories which

were proposed before this technological and communication revolution. This section briefly discusses the financial system of Pakistan.

Pakistan's financial system is diversified and sophisticated than other developing countries. Commercial banks are playing a dominant role in Pakistan's financial system. Other financial institutions of Pakistan including stock markets, specialized financial institutions, insurance companies, leasing companies are also working effectively (Haque, 1997). Non-banking financial sector is relatively smaller than the commercial banks. Total assets of the commercial banks were about 56 percent of the GDP, whereas total assets of the all financial institutions were 58 percent of GDP in 2009 (Economic Survey of Pakistan, 2009). Thus, non-banking financial sector has great potential to grow. Multi-pronged financial reforms will serve the purpose best to enhance the effectiveness of the non-banking financial sector. Balanced growth of financial system is essential for a sound and vibrant corporate sector.

2.2 CORPORATE SECTOR OF PAKISTAN

From 1999 to 2011 Pakistan has passed through different political and economic eras. In the year 1999 General Pervaiz Musharaf (The Army Chief) in 1999 dissolved the democratic government of Pakistan Muslim League (N). In the general election of 2002 Pakistan Muslim League (Q) formed the government under the patronage of General Pervaiz Musharaf for five years. The government policies, especially economic policies were almost consistent during this era. In 2008 General Elections PPP (Pakistan Peoples' Party) got the mandate to form a government in coalition with other political parties. During this period serious political and economic challenges were faced by Pakistan. The biggest economic problem during this government was energy crises which they failed to resolve. This economic suffocation affected Pakistan's industry

the most. This period is the most critical economic period for the industry with respect to business decisions and especially financial decisions.

Economists have consensus that for sustainable economic growth a sound and efficient corporate sector is essential. The key to develop a sound and efficient corporate sector is a strong and balanced regulatory regime based on investors' protection and good governance (Iakova and Wagner 2001). The basic law governing the corporate sector of Pakistan is Companies Ordinance 1984. The other sources of law include court judgments, rules, regulations, directive, guidelines and policies issued by regulatory bodies time to time for solving the emerging issues and problems. As a mix economy, the corporate law of Pakistan allows various formations of the companies like single member company, private limited company, public limited company, company limited by guarantee and unlimited companies. Corporate sector of Pakistan is mainly regulated by the Securities and Exchange Commission of Pakistan (SECP). Securities and Exchange Commission of Pakistan (SECP) came into force as a result of Securities and Exchange Commission of Pakistan Act, 1997. The SECP is responsible for developing efficient corporate sector and financial markets in Pakistan based on international legal standards and best practices. State Bank of Pakistan along with the SECP regulates the companies working in the financial sector of Pakistan. As a major regulator of the corporate sector of Pakistan both organizations are performing a variety of regulatory and supervisory role in Pakistan.

Pakistan has witnessed a remarkable growth in the corporate sector in the last few decades, this development is attributable to its investors' friendly policies and economic freedom for the investors. The growth was accelerated after 1991 financial reforms in which foreign investors were given economic freedom at par with local investors. Following are the numbers of the different companies registered in Pakistan under the Companies Ordinance 1984 in last five years.

Table 2.1 Companies registered under Companies Ordinance 1984

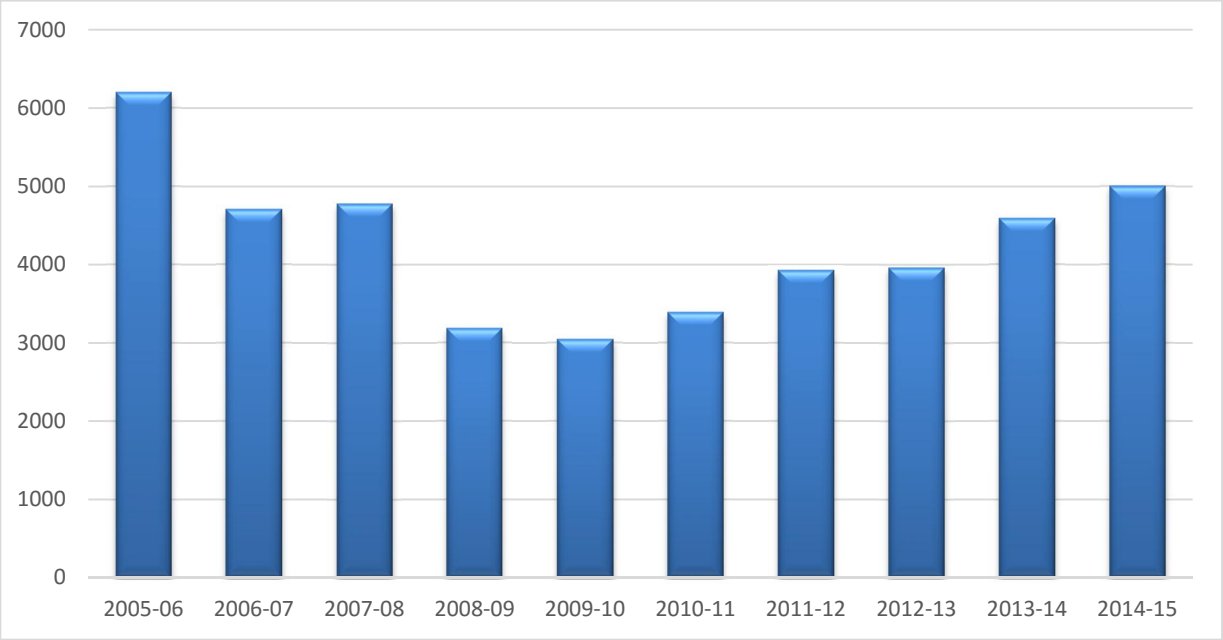
Types of Companies	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Companies limited by Shares:										
Public listed (Only those which are registered under the Ordinance)	613	612	616	616	609	648	602	595	580	576
Public unlisted	2178	2211	2168	2214	2223	2207	2237	2213	2250	2322
Private	45928	46548	46125	49042	50750	53750	56335	55938	57650	60758
SMCs	436	610	775	902	1024	1225	1438	1623	1792	2079
Total Companies limited by shares	**49155**	**49981**	**49684**	**52774**	**54606**	**57830**	**60612**	**60269**	**62282**	**65735**
Companies limited by Guarantee u/s 43	62	68	64	68	69	73	75	71	71	72
Not for profit associations U/s 42	341	356	398	429	449	500	533	582	634	680
Trade organizations	181	202	202	205	205	213	222	224	228	251
Foreign companies	653	710	725	778	783	798	807	838	847	881
Unlimited companies	5	5	3	3	3	3	3	0	1	1
Companies under section 503 of the Ordinance	4	5	4	4	5	0	0	3	2	2
Total Companies	**50401**	**51327**	**51080**	**54261**	**56120**	**59417**	**62252**	**61989**	**64067**	**67624**

Source: Data extracted from SECP Annual Reports

Total sixty seven thousand six hundred and twenty four companies were registered under the Companies Ordinance 1984 by the end of financial year 2014-15. Ninety seven percent of the companies are limited by share and only three percent are other formations. Out of companies limited by shares, 93% are private companies. Private limited companies are the largest segment of the corporate sector. Single member companies are 1.87% of the total companies limited by shares. Single member companies (SMCs) were started incorporating in 2003 by the Securities and Exchange Commission of Pakistan with the approval of the Federal Government.

In the last five years about six thousand new companies were registered. The largest chunk of the registered companies is the companies limited by shares parallel to the other economies of the world.

Figure.2.1 Year wise new company incorporation



2.2.1 Capital markets

The role of capital markets is the efficient allocation of funds, efficiency in terms of reduction in transaction cost. Efficient capital markets are essential for the effective flow of funds from households to the business. Capital markets facilitate the effective utilization of funds for economic growth and prosperity. As a part of financial system capital markets play an important role in capital formation. Capital markets not only meet the capital requirements of the business, but also provide liquidity to the investors at the same time. This twofold function of the capital markets encourages savings and investments which are core to the economic development of any country. Pakistan's capital markets like other developing countries are not complete and non-segmented. Since the development of capital markets is not just the matter of good economic policies but also time variant function. Capital markets just emerge and evolve over time if the land for investments is fertile and nourished by good economic planning. Compared to developed economies Pakistan's capital market is at the infancy stage. Capital market consists of equity market and the debt market.

2.2.2 Equity Market

Equity markets play an important role in sustainable economic development of the country. Complete and dynamic equity markets efficiently channelize funds from household to business sector. Efficient distribution of national resources increases the available stock of capital and efficient utilization of the resources. This function of the equity market is technically called Formation of Capital. By the formation of capital long run availability of funds is ensured which generates positive economic activity in the country. Increase in economic activity results more income and savings for household and better economic life.

Pakistan has three stock exchanges namely Karachi Stock Exchange, Lahore Stock Exchange and Islamabad Stock Exchange. Karachi Stock Exchange is the largest and the most

liquid stock exchange of Pakistan with capitalization of more than 41 billion U.S. dollars and average daily turnover of 254 million shares (KSE website as on May 30th 2012). KSE 100 index is a weighted average index is being used as a performance indicator of Karachi Stock Exchange. KSE 100 index is a diversified index of 100 shares. Lahore stock Exchange is the second largest exchange of Pakistan with an Aggregate Market Capitalization of Rs.3294.1 billion. Islamabad Stock Exchange is the smallest exchange of Pakistan with total number of listed companies (as of July 2012) 253 with an Aggregate Market Capitalization of Rs.2824.4 billion.

Table 2.2: Performance of KSE at glance (In million except companies, index and bonds data)

	31-12-2008	31-12-2009	31-12-2010	30-12-2011	31/12/2012	31/12/2013	31/12/2014	31/12/2015
Total No. of Listed Companies	653	651	644	638	573	569	557	560
Total Listed Capital - Rs.	750,478	814,479	919,161	1,048,444	1,086,439	1,116,005	1,160,341	1,189,519
Total Market Capitalization - Rs.	1,858,699	2,705,880	3,268,949	2,945,785	4,134,732	5,154,738	7,022,692	7,421,032
KSE-100^{TM} Index	5,865	9,387	12,022	11,348	16,538	22,758	29,790	34,827
KSE-30^{TM} Index	5,485	9,850	11,588	10,179	13,387	16,208	20,416	21,573
KSE All Share Index	4,401	6,666	8,359	7,857	11,643	14,988	21,973	24,037
New Companies Listed during the year	10	4	6	4	4	4	5	9
Listed Capital of New Companies - Rs.	15,312	8,756	33,438	16,011	6,275	7,404	19,235	38,140
New Debt Instruments Listed during the year	7	1	4	6	5	9	5	4
Listed Capital of New Debt Instruments - Rs.	26,500	3,000	5,650	14,755	2,000	12,255	8,779	31,000
Average Daily Turnover - Shares in million	147	180	133	97	198	221	229	233
Average value of daily turnover - Rs.	14,228	7,451	4,405	3,506	4,731	5,708	8,730	11,102

Source: Data extracted from the annual reports of KSE

Last eight years data of KSE reflects very encouraging performance for the equity securities. Market indicators (KSE-100 Index and KSE-30 Index) show a gradual recovery of the stock prices, but no encouraging signs for the debt instruments. The listed capital of debt instruments is significantly low compared to the equity securities.

Overall Performance of the capital market during the last decade as shown in the following table depicts a symmetric pattern. The period from 2004 to 2007 was the best period in terms of turnover and funds mobilization for Pakistan's equity market. It is of great interest specifically with reference to this research that during last decade equity market has witnessed mix performance. The symmetric pattern will yield most robust results and findings of this study.

The data show a constant decrease in the number of listed companies in all exchanges. One of the apparent reasons for this simultaneous delisting trend in all exchanges is that overwhelming majority of the companies listed on the LSE and ISE are also listed on the KSE. It is another very important and interesting area of research that what factors affect the delisting decisions.

Table 2.3 NUMBER OF LISTED COMPANIES, FUND MOBILISED AND TOTAL URNOVER OF SHARES IN VARIOUS STOCKEXCHANGES

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
KARACHI STOCKEXCHANGE														
i) Total Listed	712	702	668	659	658	658	653	651	644	638	591	569	557	560
ii) New Companies Listed	4	2	16	15	14	16	7	8	8	1	3	4	5	6
iii) Fund Mobilized (Rs in billions)	15.2	23.8	4.2	54	41.4	49.7	62.9	44.9	111.8	31	115.1	29.5	47.6	29.1
iv) Total Turnoverof Shares (in billions)	29.1	53.1	97	88.3	79.5	54	63.3	28.3	43	28	38.1	54.32	56.58	38.38
LAHORE STOCKEXCHANGE														
i) Total Listed Companies	581	561	647	524	518	520	514	511	510	496	460	440	432	433
ii) New Companies Listed	3	2	18	5	7	10	2	9	25	9	2	2	4	8
iii) Fund Mobilized (Rs in billions)	14.2	4.1	3.1	42.1	24.5	38.8	29.7	32.8	67.5	18.1	5.5	7.7	40.4	4.3
iv) Total Turnoverof Shares (in billions)	18.3	28.2	19.9	17.5	15	8.2	6.5	2.7	3.4	1.1	0.9	1	0.7	0.2
ISLAMABAD STOCKEXCHANGE														
i) Total Listed Companies	267	260	251	232	240	246	248	261	244	236	218	210	210	218
ii) New Companies Listed	3	1	8	5	6	12	7	15	2	-	-	1	1	7
iii) Fund Mobilized (Rs in billions)	3.7	11.5	2.6	27.6	5.2	30.7	24.6	24.8	76.7	17.8	12.8	8.1	8.1	6.9
iv) Total Turnoverof Shares (in billions)	2.7	2.1	1.4	0.7	0.4	0.2	0.6	0.3	0.2	0.04	0.03	0.03	0.03	0.02

Source: The data extracted from the Economic Survey of Pakistan (various Issues)

2.2.3 Debt market

For any economy a vibrant debt market is crucial for sustainable economic growth. Debt market helps in channeling funds from lenders to corporate borrowers. Debt instruments provide financial flexibility to both investors and the corporations. In developed countries debt markets have significant contribution in the national exchequer and constitute a relatively large portion of total capital markets as a complementary source of finance. In Pakistan, however, debt market could not develop due to political and administrative reasons. Due to ineffective debt capital market Pakistan's corporate sector heavily depends on the banking sector (Economic Survey of Pakistan, 2012). Shah (2007) reported that 82% of the total debt of textile companies was raised from the banking sources.

Pakistan's debt market as other developing market is incomplete (lack depth and width) and illiquid. Market capitalization of debt securities is less than one percent of GDP, which is very low compared to other countries[1]. Recently a joint task force of SBP and SECP has been formed to give recommendations to the regulators for development of the debt market[2].

As shown in table 1.4, relatively a small number of debt securities are in place. A government with a total market share of 98% is by far the largest issuer of the debt securities (Economic Survey of Pakistan 2012). The share of corporate sector and other constituencies is negligible. The major

[1]DEBT CAPITAL MARKETS COMMITTEE REPORT (2007) The committee reported that one of the major impediments in the development debt securities market is the ineffective role of Banks as a trustees of TFCs.

[2] SBP Governor Yaseen Anwar disclosed while delivering his key-note address at a conference on 'Long Term Debt Financing - Issues and Challenges for Pakistan organized by the Institute of Business Management on March 2012.

reason of this dichotomy is the fact that firms feel it easier, cost effective and less risky to raise funds from the banks.

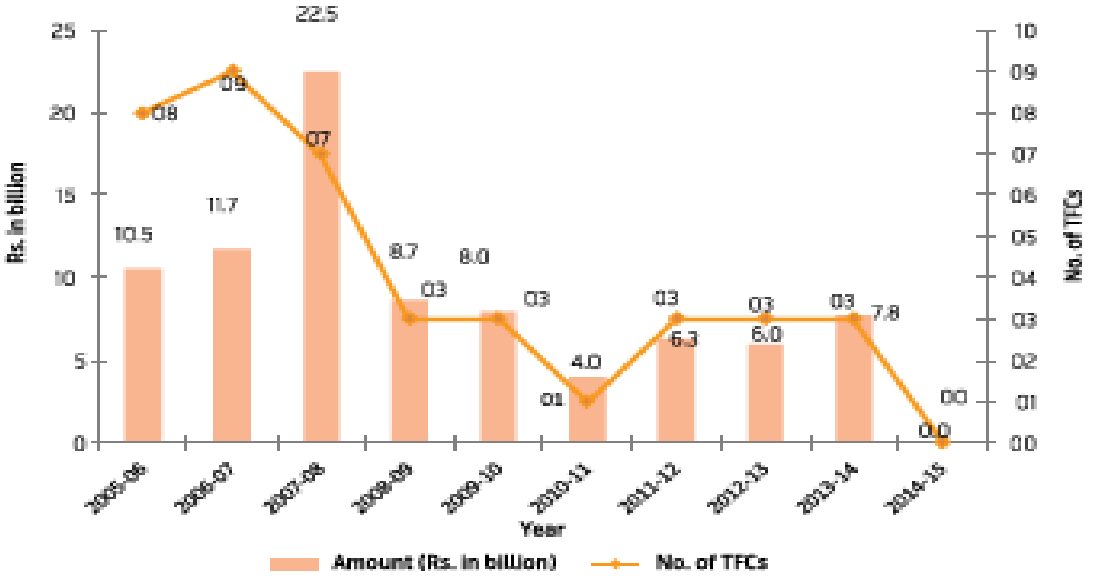
Table 2.4 Number of companies issued debt instruments and Amount in Billion Rupees of Debt Securities as on 30th June 2015

Privately placed debt securities			
Sr.	Name of Security	Number of Issues	Amount (In billion rupees)
1	Term Finance certificates	2	4.75
2	Sukuk	2	5.2
3	Commercial Papers	1	0.5
	Total	5	10.45
Corporate debt securities outstanding			
Sr.	Name of Security	Number of Issues	Amount (In billion rupees)
1	Listed term finance certificates (L-TFCs)	20	30.36
2	Privately placed TFCs(PP-TFCs)	33	68.86
3	Sukuk	42	393.13
4	Commercial Papers	1	0.5
	Total	96	492.85

Source: SECP Report 2015

The data reflect that Privately Placed SKUKs have the largest share in the overall corporate debt market and the Privately Placed Term Finance Certificates come second. The share of the other corporate debt securities is negligible. The data show that the debt market is incapable of meeting the financing requirements of the corporate sector, thus the corporate sector depends on the other financial institutions for debt financing. This draws attention towards the significance of the banking sector as determining factors of capital structure adjustment speed. Besides other essentials, a sound financial system is one which has a variety of available options to the users of funds as well as providers of funds. Pakistan's corporate sector is deprived of many financial choices which their counterparts have in developed countries. This fundamental difference in decision alternatives poses a framing problem. Best out of many choices for capital structure restructuring and best out of available choices for capital structuring cannot be benchmarked with one yardstick.

Figure 2.2: Corporate Debt Market at Glance



Source: SECP Report 2015

This whole scenario depicts an interesting situation and demands a research study to explore the financial policy of the firms operating in this unique financial environment. It is imperative to investigate the corporate leverage decisions and their implications for the firms working in such financial system. This research addresses the capital structure related issues in the customized financial system of Pakistan and would help to generalize the findings to the developing economies like Pakistan. The results of this research would also available for comparison with developed economies of the world.

Pakistan like other developing countries of the world is facing economic challenges and also offers promising business opportunities. The corporate sector of Pakistan has great potential to grow on sound foundation. The results of the research studies conducted in developed economies or other countries cannot be generalized to Pakistan because of socio-economic differences. Pakistan has made reasonably good economic growth in recent past besides all economic challenges like war on terror, energy crises and law and order conditions. These

challenges discourage foreign investors besides the fact that government of Pakistan has formulated very investment friendly policies. This economic vacuum offers great business opportunities. This potential can be fully realized only if right and thoughtful financial decisions are made. The research studies peculiar to Pakistan's challenging environment can guide corporate sector to formulate effective financial policies. This study is thorough investigation of financial policy of corporate sector of Pakistan. This research study offers solution to the unique issues of capital structure of corporate sector of Pakistan.

CHAPTER NO. 3

REVIEW OF LITERATURE

The review of literature on capital structure could be organized in several ways. One approach used by many scholars (e.g., Aggarwal, 1981; Ali, Ahmed and Hisham, 2009; Bancel, and Mittoo, 2004) is to construct a model and discuss how existing models and theories fit into this model and/or the discrepancy, if any, is highlighted. The second approach is to discuss model and variables separately with reference to the existing literature (e.g., Alti, 2006; Baron, 1974; Brealey, Leland, and Pyle, 1977). The set of factors that has been included in the model presented here is relatively large and discussion of individual factors would not yield clearer understanding. Thus the literature review is organized according to the dominant theories of capital structure and then individual variables are justified. It has been tried to maintain the chronological order wherever possible. The empirical evidences of theories have been articulated into the relevant category of theories. Certain studies fit into more than one category of theories or variables which are discussed accordingly. It has been tried to group the relevant empirical evidences around the theory to which they relate, to the possible extent. The larger portion of the literature is focused on the empirical research to test the capital structure theories. Therefore, the findings are in line with the employed methodology without criticizing the methodology.

3.1 BRIEF CHRONOLOGY OF IMPORTANT CAPITAL STRUCTURE THEORIES

The ideas of capital structure in the modern business sense can be traced back to the year 1938 when Williams J. B wrote his book "The theory of Investment Value" as reported by Rubinstein (2003). William floated the idea but did not propose any explicit model or theory of financial policy. He just recommended that some theory should be developed to understand the financial decisions of

some firms. Same is the case of Weston (1955) who suggested that theories of capital structure should be developed to answer the questions; teachers come across while teaching corporate financial policy. Both of the aforementioned pieces of literature could not get the attention of academia and practitioners due to nonexistence of any explicit theory or model. Modigliani and Miller (1958) however, first time advanced a theory of capital structure and got considerable attention of academia and practitioners. As pioneer capital structure theorists, they set stage for further research on this imperative decision of the firm. On the word of their supposition, firm's value is independent of its capital structure under restrictive assumptions of perfect capital markets with no corporate or personal taxes, complete perfect market, no arbitrage and equal rate of interest for individuals and firms. Clearly stating the conditions under which capital structure is independent of the firm value, actually they irradiated the factors which affect financial policy of the firm. Later in the year (1963) Modigliani and Miller considered the corporate tax which was held constant in their initial supposition and theorized that debt provide a tax shield. By 1426relaxing the assumptions of their initial supposition they set the basis for "Trade-Off Theory" which is most significant and convincing theory of capital structure. Many scholars have developed their careers by refuting, advocating and proving this theory from different perspectives. This theory is most researched in the finance literature.

Building on the work of Modigliani and Miller (1958) Donaldson (1961) proposed a theory of firms' preference for financing sources. They hypothesized that firms follow an observable pattern of preference when they finance the growth opportunities or operations. This theory was modified by Mayer and Majluf (1984). They proposed an adverse selection model which was later known as "Pecking Order Theory". They gave a ranking of preference for various sources of finance. As a

contender of tradeoff theory, pecking order theory also fascinated many researches in the field of financial policy.

According to Mayer and Majluf 1984 "*A firm is said to follow a pecking order if it prefers internal to external financing and debt to equity if external financing is used*."

Capital structure has also been widely researched with agency perspective. Jensen and Mackeling (1976) initiated the theory of agency conflict in which two types of agency conflicts were accentuated; one among the owners and the mangers and second between the owners and the debt financers. Agency theory envisages positive relationship between leverage and firm's value.

Ross (1977) and Leland and Payle (1977) deliberated that inefficiencies in the capital market are propelled by the asymmetry of information between the managers and the outsiders. Asymmetric information theories try to predict the changes in prices of securities in response to capital restructuring and observe the preferred sources of financing.

3.2 MODIGLIANI-MILLER IRRELEVANCE THEOREM

All the developments in the field of financial policy are attributed to the debate initiated by Modigliani and Miller (1958). None of the significant and explicit theory of capital structure could be found before their supposition therefore their work is considered seminal work in this segment of finance. They hypothesized that, in a perfect market, the value of a firm is unaffected, no matter how that firm is financed assuming that there is no taxation, no agency costs and asymmetry of information. This theory instigated many questions which later on served as a foundation stone for new theories and models of capital structure. The proponents of this theory argue that by distribution of cash flows among the capital providers in any proportion would have no effect on the aggregate value of the firm. Normally an example is given that cutting the cake in whatever manners will not affect the size of cake. The implicit assumption of this theory is that investors and firms have equal

access to the financial markets and they have equal opportunity to rebalance their financing mix. Thus the leverage of the firm is independent of whatever leverage investors have, therefore firm's leverage would not affect the market value of the firm.

Afterward, two perspectives of irrelevance principle emerged. One is classic arbitrage based view in which investors offset the leverage of firms with their own leverage; consequently no effect on the market value of the firm. Steglitz (1969) Hishelifer(1966) and Baron (1974) strongly advocated this classic arbitrage based irrelevance proposition and reported convincing evidence in favor of their claim. Second , model of irrelevance principle based on market equilibriums was given by the Auerbach and King (1983). They argued that equilibrium conditions bear the cumulative effect of aggregate debt and equity in the market. They failed to specify that how market equilibrium can affect the firm' financial policy. Their work was in line with the Miller's (1977) argument that personal taxes and corporate taxes are determinants of market level aggregate leverage.

Popular debate on MM principle is regarding the unrealistic assumptions of the theory. The critics gave convincing and logical evidences against the theory. The opponents criticized the MM theorem on the ground that it is based on unrealistic assumptions which do not hold true in the real world. The proponents answer this criticism by stating that MM theorem's assumptions are basically illustrious factors under which capital structure does affect firm value.

In 1963 Modigliani and Miller reviewed and revised their irrelevance principle by including the factors initially held constant, they documented that the use of debt leads to optimal capital structure that minimizes the cost of capital and thus increases firm's value. The dilution in cost of capital is attributed to the tax benefit of debt specifically for the economies where the interest is tax deductible expense. Based on these developments, significantly large number of theories was proposed. Many scholars tested, refuted or challenged these theories and built their careers in finance.

In line with Modigiliani and Millers' later work Stiglitz and Joseph (1969) also examined the MM theorem without the assumptions originally taken by M&M. They gave convincing arguments in favor of the existence of optimal capital structure. Lewllen and Mauer (1988) by taking risk perspective of M&M theorem reported that irrelevance principle holds true, if time and state are controlled in a certain way. Their findings indicate that capital structure affects the value of the firm if the risk is a time variant factor. Titman (2002) highlighted the implications of M&M theorem with reference to the financial markets. He argued that market conditions affect the leverage decisions of the firms and market conditions are determined by the suppliers of capital i.e. individuals and firms. Regardless of the implications and significance of their thesis, Modigliani and Miller actually paved the way to the capital structure research.

3.3 PECKING ORDER THEORY

Pecking Order Theory as a contestant to Tradeoff Theory has also got considerable attention of the academia. Both theories have been central point of finance literature for last few decades. Economics model of inside information is the origin of theories based on asymmetric information like pecking order theory. Managers as insider have better insights about the financial prospects of the company. Outsiders misprice the securities due to incomplete and inaccurate information about the financial health and profitability of the firms. Myers and Majluf (1984) first time hypothesized that firms follow a pecking order for different financing sources. They hypothesized that firms prefer internally generated funds over external debt financing and debt financing over the issuance of new equity. Later Shayam-Sunder and Myers (1999) established an empirically testable model for pecking order theory. They tested their model on US firms and found strong implications of pecking order theory. Kraskar (1986) protracted the concept of Mayer and Majluf by considering the size of the project being financed and the corresponding new issue. He upheld the Mayer and Majluf's

supposition that large stock offerings affect the stock price inversely. Heinkel and Zechner (1990) also got the similar results and added to that debt is less mispriced than equity, thus, financing new projects with debt would reduce the risk of overinvestment. Brenan and Krause (1987) found results contrary to the Pecking order as envisioned by the Mayer and Majluf. They reported that firms do not follow the order of preference strictly in accordance with the pecking order theory. They argued that the problem of overinvestment can be resolved by sensible financing no matter how that financing mix is established. Neo (1988) also rejected the thesis of Mayer and Majluf for same reasons mentioned by Branan and Krause (1987). Grundy (1989) in line with Brenan and Krause repudiated the pecking order theory and concluded that by increasing financing choices would invalidate the claim of pecking order theorist.

Frank and Goyal (2002) in their empirical paper tested the pecking order theory on a large set of pooled data, they concluded that large firms follow pecking order ,however, their finding do not supported pecking order in case of small firms. In small firms equity issue tends to dominate external debt in order of preference. Jong, Verbeek and Verwijmeren (2009) also attest pecking order and found supportive results for pecking order theories. They reported a significant relationship between leverage decisions and debt capacity. Keeping debt capacity constant they tested firm size and time along with pecking order. They concluded that financing deficit and financing surplus play a vital role in leverage decisions. However, Ahmed and Hisham (2009) found mix results in their comparative study of pecking order model and tradeoff model. They concluded that internal funds deficiency is the major determinant of leverage of Malaysian companies which is consistent with the pecking order theory. They also found statistically significant results in favor of tradeoff theory. Lemmon and Zender (2010) tested pecking order theory with reference to rating of the firm's outstanding debt. The implicit assumption of using debt rating as a proxy for debt capacity is the fact

that companies with high rated debt have relatively better prospects to generate more debt. With the sample of heterogeneous companies they reported pecking order theory best describe the financing patterns of small and large companies. Their findings are consistent with the pecking order theory.

3.4 AGENCY THEORY

In corporate setting, management is separate from the ownership. Management act as agent of owners, the separation of ownership from the management may create a conflict of interest between agents (management) and principals (owners). Management may not necessarily act in the best interest of shareholders for the sake of their own benefits. This phenomenon is referred as agency problem. Jensen and Meckling (1976) initiated this stream of capital structure studies. They considered the agency cost associated with the debt financing and analyzed its impact on the financing decisions of the firm. They indicated two types of agency conflicts one between the equity holders and managers and second between the creditors and the management. They documented that in first type of conflict debt serve as a control mechanism by creating financial inflexibility for the managers to serve their own interests. The second type of conflict, which exists between the debt holders and the equity holders, they treated as cost of the debt. Assets substitution effect (investment in more risky assets by managers contrary to the risk tolerance of debt providers) decreases the value of debt which is a cost for the firm. They argued that firms strive to optimize capital structure in between these two agency conflicts. Jensen (1986) argued that since debt requires mandatory fix payments, it reduces the free cash flows, consequently reduces the space for managers to persuade their personal benefits at the cost of equity holders. Mayer (1977) also embarked upon similar kind of agency conflict he reported that the equity investors don't have any incentive to contribute capital in financially distressed firms even for value increasing projects. Jensen (1986) gave another advantage of using debt, he observed that the mandatory cash payments of interest and debt servicing

will reduce the free cash flows resultantly eliminate or reduces the discretionary powers of the mangers. According to his view debt serves as the disciplinary mechanism to control or reduce the agency cost. Stulz (1991) specified the same thing as the cost of debt financing. As per their thesis the cost of debt, which was not specified by the Jensen (1986), is underinvestment due to financial inflexibility and risk of financial distress. Their perceived cost of debt is of similar nature to the supposition of Haris and Raviv (1990). However, the benefit of debt financing indicated by Haris and Raviv (1990) is the ease of liquidation by the equity holders in case liquidation is desired. They reported that firms with higher liquidation value have more debt in their capital structure contrary to the firms having less liquidation value. Hirshleifer and Thakor (1989) concluded that agency cost, bankruptcy cost and tax benefit of the debt when combined to a single place, gave birth to the concept of trade-off. The trade of between the cost and benefits of the debt financing further leads to the concept of optimal capital structure.

Chang (1987) using agency model, however, found a negative relationship between leverage and profitability, contrary to other studies. Their findings indicate that less profitable firms have comparatively high degree of financial leverage. There are fewer studies which have concluded negative relationship between debt financing and performance of the firm. Titman and Tsyplakov (2007) used continuous time model to prove the impact of agency cost on the optimality of the capital structure. Their supposition based on the endoginity of the firms' value and the investment choices, indicates relationship between cost of financial distress due to agency problem between shareholders and bondholder and the firm's ability to adjust its capital structure.

The implications of all variations of agency theory indicate significant relationship between the leverage and firms value. Agency theory also indirectly implies some kind of tradeoff between the administrative cost of debt and administrative benefits of debt financing.

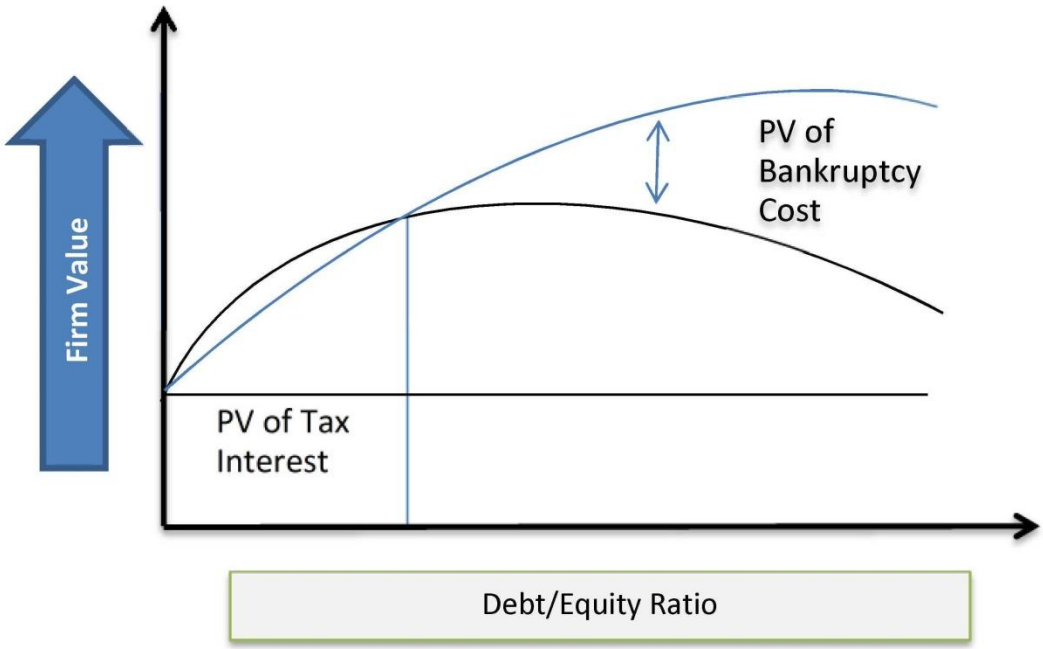
3.5 TRADEOFF THEORY

The most researched and substantial theory of capital structure is tradeoff theory. Tradeoff theory is often described as a group of related theories which emerged to establish the existence of optimal capital structure. Optimality is ascribed to tradeoff between different types of cost and benefits of debt. Personal and corporate taxes, cost of financial distress, market imperfections and agency conflicts are often synthesized as variations of tradeoff theory. This stream of finance literature came into being when scholars started relaxing basic assumptions of MM theorem. Academics have investigated various tradeoffs between an advantage of the debt and costs associated with debt financing. These tradeoffs can be grouped into four categories or four subsidiary models, namely; (1) debt tax shield (2) cost of financial distress (3) Agency problem (both between debt providers and management and equity holders and management) (4) Market signaling theory another countenance is asymmetric information.

The first expression of tradeoff theory can be traced back to the Modigliani and Miller's work in 1963 when they relaxed one of the major assumptions of their irrelevance principle, the existence of personal and corporate taxes,. They concluded that the leverage does affect the value of firm in presence of corporate and personal taxes. On the way pawed by Modigliani and Miller, Scott (1976) proposed a multi-period static model of tradeoff, assuming the existence of possible bankruptcy and imperfect market. They argued the existence of a unique optimal capital structure of the firm. He also specified the parameters of the optimal capital structure of the firm. Mauer and Ott (2000) gave a detail and comprehensive analysis of competing models of tradeoff theory which are later widely researched with reference to the growth opportunities and debated with reference to the explanatory powers of these models.

In the absence of offsetting the cost (bankruptcy cost) the MM irrelevance model entails hundred percent debt financing which does not hold true in the real world. The net marginal benefit of debt is decreasing function, due to the offsetting cost of debt, after certain level the cost of debt outweighs the benefit, therefore debt is no more advantageous. The point where the cost and benefit of debt is equal or marginal benefit of debt is zero is called optimal capital structure. Kraus and Litzenberger (1973) referred cost of debt as deadweight cost of financial distress. They reported that capital restructuring decisions are mostly driven by the potential cost of bankruptcy which is bankruptcy risk. They documented that firms optimize their capital structure by weighing the bankruptcy risk with tax benefit of debt.

Figure 3.1: Graphical presentation of Tradeoff Model



This tradeoff indicates that the marginal benefit of tax saving gradually offset against the cost of debt. This tradeoff between benefit and cost of debt postulates existence of optimal capital structure (Graham and Tucker, 2006;DeAngelo and Masulis, 1980). DeAngelo and Masulis (1980)

concluded that the marginal benefit of tax and default cost if incorporating in the Miller's differential tax model fallouts market equilibrium in which each firm has a distinctive optimum leverage. Their claim implies that the optimality is endogenous to firms, therefore the assumptions of bankruptcy cost, agency cost or other leverage related costs are irrelevant. In support of their thesis, they postulated that market prices capitalize the personal and corporate taxes and make bankruptcy cost a significant consideration in debt equity trade off. Leland (1994) tried to standardize the tradeoff model. Their generic model implies that where the marginal bankruptcy cost is equal to the marginal tax benefit that point is called optimal capital structure. He suggested that the tax benefit of debt is offset by the cost of financial distress which is the result of debt financing. At the point where the marginal benefit of financial leverage is equal to the marginal cost of the financial distress is called optimal capital structure.

In all types of trade off theories, the cost and benefits of debt were calibrated by different perspectives like Jensen (1986) treated debt as a tool to control agency problem which exist between the management and shareholders; Leland and Pyle (1977) and Ross (1977) calibrated issue of new debt as signals to market regarding the financial position of the firm.

3.5.1 Dynamic Tradeoff Model

Static tradeoff theory states that firms have an optimal capital structure which is determined by balancing the cost and benefits of the debt. However, the dynamic model of tradeoff theory implies that the optimal capital structure of the firm is a time variant phenomenon. Due to random shocks and changes in macroeconomic conditions, the optimal capital structure of the firm varies over time and firms deviate from their optimal capital. The fluctuation in optimality over time in response to changes in the financial environment and firm specific factors force firms to rebalance their capital structure. Both models indicate existence of optimal capital structure, however, dynamic

model as the extension to static model devise capital structure adjustments toward optimal for the firms.

Fischer, Heinkel and Zechner (1989) introduced the dynamic tradeoff model based on market imperfections. Considering the transaction cost, they found empirical evidence in favor of their argument that firm specific factors determine the range of firms' leverage ratio. Shayam Sunder and Mayer (1999) applied tests of dynamic tradeoff model and concluded that the firms which marginally balance the cost of debt with tax benefits outperform the firms which don't optimize their capital structure. Hovakimian, Opler, and Titman (2001) illuminated the role of capital structure deviations on the restructuring decisions. They studied different restructuring strategies with reference to the capital structure deviations. They found that deviation from the optimal capital structure have greater influence on the repurchasing strategy (treasury stock or retirement) than the issuance of new securities for rebalancing of capital structure. Arvin and Francis (2004) testified that firms adjust their capital structure to the industry mean. They observed that adjustment speed is high when the firms are over levered and the speed of adjustment is low when the firms are under levered. Their applied non parametric Fisher Exact Probability (FEP) test and Goodman-Kruskal Gamma measures in their analysis. Flannery and Rangan (2006) also affirmed that firms have target capital structure and firms strive to reach their target level. In their empirical study, they found that firm could achieve only one third of their target level. Flannery and Hankin (2007) documented that adjustment speed is the result of firms' endeavor to balance between the cost of adjustment and the cost of deviation from the target. Cost of adjustment refers to the transaction cost of capital transactions and the value of firm's equity, the cost of upward deviation from the optimal leverage is referred to as cost of financial distress. Leary and Roberts (2005) argued in favor of the existence of target capital structure in favor of their supposition. They provided empirical evidences. They pointed out that firms actively

rebalance their capital structure which indicates that firms strive to achieve a specific level of leverage and referred it as “target range of leverage”. Ju.N*et.al* (2005) applied a contingent claim method to test dynamic tradeoff model. They concluded that firms with moderate deviation from the optimal capital structure should not adjust their capital structure frequently as cost of adjusting outweighs the benefit of adjustment. Flannery and Rangan (2006), using a partial adjustment model affirm that firms do have a target capital structure and strive to achieve that target level. Kayhan and Titman (2007) argued that the dynamic tradeoff model has more explanatory powers than pecking order model and market timing model. Strebulaev (2007) strongly advocated the view that none of any static model of capital structure has explanatory powers. One point optimality is beyond the reality, in dynamic economy actual capital structure deviates from the optimal capital structure and firms strive to achieve that optimality by readjusting their financing mix. The frequency of adjustment in the presence of friction is low which propels divergence of actual capital structure from the optimal one. In their most cited and seminal work on dynamic adjustments, Susmel and Zhao (2008) attested the dynamic tradeoff theory with the help of large pooled data set. In their empirical research they tested the dynamic model of tradeoff theory and reported firms adjust their capital structure, however, the parameters of adjustment vary significantly across the firms. They reported strong empirical evidence in favor of a dynamic model of tradeoff.

Very few studies on capital structure refute the existence of the optimal capital structure hypothesis. Hennessy and Whited, (2005) used a customized, dynamic tradeoff model and reported that the optimal capital structure is non-existent. Their claim cannot be taken at par because there is no reason to believe that finance managers are not aware of the implication of the optimal capital structure. However, model or methodology for testing or measuring optimal capital can be

questioned. Without any solid reason, it cannot be assumed that significant financial decisions like capital structure are made without due diligence.

3.5.2 Adjustment towards Target Capital Structure

The recent development in pecking order theory is a dynamic model of tradeoff. Dynamic model of tradeoff theory stipulates a time variant target capital structure. Firms make capital restructuring decisions to reach that target level by making capital transactions for adjustments in their existing financing mix. Firms make capital structure adjustments to achieve the optimal mix of debt and equity. The adjustment process and the magnitude of adjustment determines effectiveness of the restructuring process which is referred to as the adjustment speed. The literature suggests that speed of adjustment is influenced by many micro and macro-economic factors or more specifically firm specific or financial, environmental factors (Drobetz and Wanzenried, 2006; Hackbarth, Miao and Morellec, 2006; Huang and Ritter, 2009; Cook and Tang, 2010).

Ozkan (2001) applied the generalized method of moment for estimation of target capital and reported that firms do have long term target leverage ratios. He argued that deviation from the target capital structure is a substantial cost for the firm. Therefore, firms strive to fill this gap by corrective measures provided that the cost of adjustment is lower than the cost variance. Fama and French (2002) reported that US firms adjust their capital structure from 7% to 18% per annum. They further documented that the payout ratio of the firm affects the adjustment speed inversely. Hovakimian, Hovakimian and Tehranian (2004) in their comprehensive study investigated the operating performance, market performance and target capital structure. They concluded that capital market conditions of the firm play important role in shaping the target level of capital structure. They also found results consistent with market timing theory and reported that high stock returns encourage firms to issue equity securities. Flannery and Rangan (2006) used partial adjustment model. Their

empirical results suggest that firms on average attain one third of their target leverage ratio by making adjustments in their existing debt and equity. Hackbarth, Miao and Morellec (2006) argued that macro-economic conditions and cyclical movements in the industry affect the capital structure adjustment and this effect is stronger in cases where cash flows depend on the economic conditions. They suggested that in boom and recession periods firms should not engage in big capital transactions rather restructuring should be done more frequently and in small amounts. Their arguments are strong and logical but empirical test of their model is imperative to attest their suppositions. Titman and Tsyplakov (2007) in their proposed dynamic model argued that firms with high cost of financial distress and low agency conflict between debt holders and equity holders adjust their capital towards target level quickly. Firms having severe agency conflict cannot adjust their capital structure even if they are over levered or under levered due to financial inflexibility resulting from agency problem. Huang and Ritter (2009) found that US firms adjust their capital structure with moderate speed and it take on average 3.7 years in full adjustment. Their results imply that US firms adjust their capital about 27% per annum. Their findings are consistent with the other empirical studies. Getzmann, Lang, and Spremann (2010) in their empirical study found that Asian firms on average adjust 27% to 39% their capital structure toward target level. They applied the same methodology which is used in this study. They claim that their results are consistent with the other studies on capital structure adjustment speed. Cook and Tang (2010) investigated the impact of micro and macroeconomic conditions on the firm's ability to adjust capital structure. They reported that in good economic conditions adjustment speed is high whereas in unfavorable economic conditions firms cannot adjust their capital quickly.

According to the dynamic model of tradeoff theory firms have a target level of the capital structure and firms actively pursue that target level keeping in view the cost and benefits of

restructuring. In favorable economic conditions firms adjust their capital to the target provided the firm specific financial conditions permit (e.g., Bancel and Mittoo 2004; Sundaresan, Wang and Yang, 2015; Elsas, Flannery, and Garfinkel, 2014). The adjustment process involves a tradeoff between the benefit of tax shield and overall cost of debt, which include the financial cost, administrative cost and cost of financial distress. During the good economic conditions generally the firms have more financing avenues and cost of adjustment is comparatively low. Economic conditions play an important role in correction of capital structure deviations caused by random shocks (Antão and Bonfim, 2014). The underlying concept of rebalancing the capital structure is to ensure effective use of capital by leverage. More specific view of dynamic tradeoff theory poses that by random shocks firms gradually deviate from the optimal level of capital structure over time and firms constantly adjust their capital structure to undo the random shocks (Halling and Zechner, 2014). Firms adjust their capital structure fast where the cost of being away from the target level of capital outweighs the cost of rebalancing. Deesomsak, Paudyal and Pescetto (2004) probed Asia Pacific firms' capital structure decisions and found that environmental factors, along with the firm specific factors play significant role in financing decisions. Existing literature suggests that capital structure adjustments are attributed to the institutional setting and environmental factors. Environmental factors in broader perspective affect the rebalancing cost of capital. Convergence to target capital structure which is also referred as adjustment speed is considered the result of legal and financial environment (e.g., Cook and Tang, 2010; Elsas and Florysiak, 2013; Getzmann, Lang, and Spremann, 2010).

For the last two decades a significant number of studies have focused this issue and produced consistent results. Graham and Harvey (2001) reported that firms have a target level of the capital structure and capital structure rebalancing is done to that target in mind. In their large survey they

reported that more than 80% Chief Financial Officers of the firms do have a strict target capital structure or an acceptable range of capital structure. They also claimed that the CFOs of the firms clearly know or acknowledge the cost and benefit of rebalancing the capital structure.

Being overleveraged or underleveraged cannot be considered a deliberate choice of firms rather the environmental changes over time turn a well knitted capital structure to overleveraged or underleveraged. This deviation from the optimal or target level of the capital structure impairs the firm's value (e.g., Mukherjee and Mahakud, 2010; Aybar, Casino and López, 2012). The firms strive to undo the deviation by making adjustment in capital structure. The adjustments are done by issuing, retiring or swapping the securities or debt covenants. These transactions do involve cost now the firms have to tradeoff between the cost of adjustments and the resulting incentives. If the cost of adjustment is low the adjustment speed will be higher and *vice versa*. In the ideal state where there is no transaction cost firms adjust their capital structure immediately where there is high transaction cost the adjustment speed is competitively slow. The capital structure adjustments are well documented in the literature. Meany studies have found that rebalancing behavior exists and firms do adjust their capital the speed of adjustment depend on the transaction cost of the adjustment. Leary and Roberts (2005) found that the transaction cost of capital adjustment has a clustering effect on the leverage rebalancing. Faulkender et al. (2008) also concluded that the cost of adjustment is an important factor, faster adjustment are reported when the cost of adjust is sunk in case the adjustment cost is incremental the adjustment is slow. The cost of adjustment is also affected by various macroeconomic and firm specific factors. The macroeconomic conditions play an important role to form the investors' expectations about the returns. Hackbarth et al. (2006) argued that the adjustment speed of capital structure is affected by the economic conditions of the country. He advocated that during economic boom the adjustment is higher than the economic recession period.

Cook and Tang (2010) focused on macroeconomic conditions to investigate the relationship between the economic conditions of the state in which firms operate. They found that in good economic state firms adjust the capital structure faster than the bad economic state. The claim of tradeoff theory has logical and empirical conviction which cannot be ignored or superseded without superior arguments and theoretical support which is still awaited.

2.6 MARKET TIMING THEORY

Ross (1977) presented a model of market timing. He claimed that restructuring decisions of capital structure are made to exploit the capital market favorable conditions. According to this philosophy firms issue equity securities in the time of favorable equity market conditions and debt in unfavorable debt market conditions. Two versions of the market timing theory got popularity in prominent finance circles. First version as inverse selection model proposed by Mayer and Majluf (1984), in which firms issue equity after releasing information to reduce the asymmetry of information assuming manger and investors are rational. Lucas and McDonald (1990) reported that firms tend to issue new equity after positive returns on stock or rise in the market. Their results are consistent with the theory that firms strive to time. Korajczyk, Lucas and McDonald (1992) studied the adverse selection over time and concluded that market timing persists.

Baker and Wurgler (2002) found market timing theory prevalent and reported that capital structure is the result of firms' effort to time the capital market. Huang and Ritter (2005) in their empirical study of US capital market found strong evidence in favor of market timing theory. They reported that US firms' external financing decisions are influenced by equity risk premium. Alti (2006) in his empirical investigation found results attesting that market timing is important determinant for the capital structure decision. He concluded that firms with good primary market which he referred as hot market issue more equity at the time of IPO opposite to the firms with cold market. After IPO

firms with good prospects and hot market increase their leverage by issuing debt securities. He implied that firms strive to exploit market conditions for rebalancing capital structure. Byoun (2008) found that firms adjust their capital structure by stepping down when firms are over levered and they have financial surplus. Firms increase their leverage by rebalancing the capital structure in the times of financial distress. His results are not consistent with the pecking order theory rather indicates financing decisions are influenced by market timing. DeAngelo, DeAngelo and Stulz (2010) also found that market timing play an important role in the financing decisions and consequently performance of the firms. They studied the market timing and the firm's life cycle together as factors of the restructuring decisions. They found reported that basic determinant of Seasonal Equity Offering is need of financing but market timing and life cycle stage play significant role as an ancillary variable.

In Pakistan's context where market is incomplete and segmented in addition to volatile economic conditions, no any single theory is comprehensive enough to explain the corporate financing decisions. Dynamic version of tradeoff theory appears to be more convincing on account of highly dynamic environment of Pakistan. It is assumed that corporate sector of Pakistan response to the changing economic conditions by making adjustments in their capital structure to bring it to the optimal level.

2.7 VARIABLES

After extensive literature review most significant (which existing studies proved significant determinants) variables have been identified and selected. The primary objective of this study is to estimate the adjustment speed of non-financial corporate sector. To this end, the parameters of the considered variables have been estimated. With the help of these parameters target level of capital structure is estimated in two steps. The logical explanation has also been given and hypothesized

relationship is established on the basis of logics and with reference to previous studies. The hypothesized signs of the relationship between the considered variables are guided by the tradeoff theory.

2.7.1 Estimators of target capital structure

2.7.1.1 Size of the firm

The research suggests that size of the firm is one of the most significant determinants of target capital structure. Researchers have interpreted the significance of size of the firm from diverse perspectives. For instance Rajan and Zingales (1995) specified that size of the firm as proxy for asymmetric information has significant effect on firm's leverage decisions. According to Rajan and Zingales (1995) large firms have more information symmetry than the smaller companies. The symmetry of information reduces the cost of capital thus has positive impact on the leverage of the firm. Lee and Kwok (1988) compared the capital structure of MNCs with the DCs and found significant difference between the capital structure of MNCs (large companies) and DCs (Small companies). Baker and Wurgler (2002) also attest that size play an important role in the capital structure decisions of the firms. Very few studies refute size as a determinant of capital structure (e.g., Aggarwal, 1981; Wald, 1999).

The nature of relationship between size and the capital structure is not clear. Tradeoff theory postulates a positive relationship whereas pecking order theory and information asymmetry assumption indicates a negative relationship. Given below is the list of studies which have found significant relationship between the size of the firm and its capital structure. There is a great deal of variation among the researchers about the direction of relationship. Mix results were found about the positive and negative relationship. This is not complete list of studies but give a fair idea that size is an important factor of financing decisions.

Sr. No	Determinants of Capital Structure	Literary Evidences
1	**Size**	o Galai and Masulis (1976) o Jensen and Meckling (1976) o Myers (1977) o Grossman and Hart (1982) o Mayer and Majluf (1984) o Titman and Wessels (1988) o Bennett and Donnelly, R. (1993) o Ozkan (2001) o Baker and Wurgler, (2002) o Bancel and Mittoo, (2004) o Hall, Hutchinson, and Michaelas, (2004) o Bancel and Mittoo, (2004) o Shah, Hijazi,and Javed, (2004) o Shah and Hijazi, (2004) o Huang and Song, (2006) o Hijazi and Tariq, (2006) o Haas and Peeters, (2006) o Delcoure, (2007) o Shah and Khan, (2007) o Frank and Goyal, (2009). o Getzmann, Lang and Spremann, (2010) o Lemmon and Zender, (2010) o Sheikh and Wang, (2011)

Conclusion: Both negative and positive relationships are found based on the underlying theory. Majority of the researches based on tradeoff models found positive relationship. This study also hold the stance of tradeoff theory. Therefore we hypothesized the positive relationship

H1: There is a positive relationship between capital structure and size of the firm.

2.7.1.2 Profitability

According to this survey of literature profitability is the second most important factor of capital structure decisions. Both pecking order theory and static tradeoff theory cogitates profitability as significant factor. However the disagreement persists on the nature of relationship between these two competing theories. Very few studies could be found which refute profitability as determinant of capital structure (see, Aggarwal (1981).

The relationship of profitability and capital structure is explained from diverse perspectives. Various tradeoff considerations pose a positive relationship for instance profitable firms employ high leverage to reduce their tax burden, in accordance with the agency theory debt as a controlling mechanism reduces the agency cost, profitable firms have low expected cost of financial distress therefore they have added advantage to use debt financing. In contrast, pecking order theorists assumes a negative relationship, profitable firms are able to generate funds from internal sources therefore their leverage ratios are lower. All of the studies in the following list have calibrated significant relationships either negative or positive.

Sr. No	**Determinants of Capital Structure**	**Literary Evidences**
2	Profitability	Bennett and Donnelly, (1993)
		Ozkan, (2001)
		Deesomsak, Paudyal, and Pescetto, (2004)
		Hall, Hutchinson, and Michaelas, N. (2004)
		Shah, Hijazi, and Javed, (2004)
		Huang and Song, (2006)
		Haas, and Peeters, (2006)
		Delcoure, (2007)
		Shah and Khan, (2007)

		Frank and Goyal, (2009)
		Lemmon and Zender, (2010)
		Getzmann, Lang, and Spremann, (2010)
		Qiu, and La, (2010)

Conclusion: Both positive and negative relationships are found in existing literature. In line with tradeoff theory most of the studies have found negative relationship between profitability and capital structure.

H2: There is a negative relationship between capital structure and profitability.

2.7.1.3 Collateral Value of Assets

Tangible assets of the firm are considered a security against the debt covenants. Literature suggests that the proportion of fixed assets in the asset structure of the firm increases the chances that firms can raise more debt than the firms having low fixed asset ratio. Morellec (2001) exclusively established that the relationship between the asset structure and financing decision is significant. The following list of the researches has tested collateral value of assets as a determinant of capital structure and found mix results.

Sr. No	Determinants of Capital Structure	Literary Evidences
3	Collateral value of Assets	Bennett and Donnelly, (1993)
		Ozkan, (2001)
		Morellec, (2001)
		Shah, Hijazi, and Javed, (2004)
		Deesomsak, Paudyal, and Pescetto, (2004)
		Hall, Hutchinson, and Michaelas, (2004)
		Huang and Song, (2006)
		Delcoure, (2007)

		Frank and Goyal, (2009).
		Lemmon and Zender (2010)
		Qiu, and La, (2010)
		Getzmann, Lang, and Spremann (2010)

Conclusion: Both positive and negative relationships are found in literature. In line with agency problem between shareholders and creditors as well as other expressions of tradeoff a positive relationship is envisaged.

H3: There is a positive relationship between capital structure and collateral value of assets.

2.7.1.4 Growth Opportunities

Conventional wisdom postulates that growing firms need more capital than firm at maturity level or having less growth opportunities. For meeting their capital requirements firms raise capital from diverse sources, by this logic a positive relationship between growth opportunities and capital structure can be expected. However, Gul (1999) found inverse relationship contrary to the conventional wisdom and results of many other studies. Following is not fully exhaustive list of studies which found significant relationship between collateral value of assets and the capital structure.

Sr. No	Determinants of Capital Structure	Literary Evidences
4	Growth opportunities	Bennett and Donnelly, (1993)
		Gul, (1999).
		Ozkan, (2001)
		Anderson, (2002)
		Hall, Hutchinson, and Michaelas, (2004)
		Shah, Hijazi and Javed, (2004)

Deesomsak, Paudyal, and Pescetto, (2004)

Low and Chen, (2004)

Haas and Peeters, (2006)

Delcoure, (2007)

Shah and Khan, (2007)

Qiu, and La, (2010)

Conclusion: The existing literature reflect mix results for this variable few studies in line with pecking order or information asymmetry suggest a negative relationship whereas tradeoff theory envisage a positive relationship.

H4: There is a positive relationship between capital structure and growth opportunities.

2.7.1.5 Non-debt tax shield

As per claim of tradeoff theorists in presence of corporate taxes, debt provide tax shield. Interest is a tax deductible expense; use of debt reduces the tax expenses of the firm. The tax deductibility dilutes the overall cost of capital and resultantly increases the value of firm. Depreciation, amortization and depletion like interest are also tax deductible expenses and provide tax shield parallel to the interest. If the firm has ample non-cash expenses which can reduce the tax burden of the firm, the firms find debt financing less attractive if other things remains the same. So a negative relationship can be envisaged between the Non-debt tax shield and the capital structure.

Sr. No	Determinants of Capital Structure	Literary Evidences
5	Non-debt tax shield	Bennett and Donnelly, (1993)
		Ozkan, (2001)
		Huang and Song, (2006)

		Haas, and Peeters, (2006)
		Delcoure, (2007)
		Shah and Khan, (2007)
		Getzmann, Lang, and Spremann, (2010)

Conclusion: Most of the studies have found negative relationship between non-debt tax shield and the capital structure.

H5: There is a negative relationship between capital structure and non-debt tax shield.

2.7.1.6 Earnings Volatility

Earnings volatility as measure of riskiness indicates negative relationship with leverage. Two implications of earnings volatility for capital structure can be established, first as measure of risk debt financers expect high return from firms having volatile earnings. Therefore firms will find it costly to have debt financing. Second; due to unpredictable earnings, firms cannot program repayment plans with certainty. The cost of potential default resists firms to deploy debt in their capital. The following list of theoretical and empirical researches tried to establish this relationship.

Sr. No	Determinants of Capital Structure	Literary Evidences
6	Profitability	Bennett and Donnelly, (1993)
		Nivorozhkin, (2004)
		Deesomsak, Paudyal, and Pescetto, (2004)
		Huang and Song (2006)
		Haas, and Peeters, (2006)
		Delcoure, (2007)
		Qiu, and La, (2010)

Lemmon and Zender, (2010)

Conclusion: Negative relationship is found in almost all studies.

H6: There is a negative relationship between capital structure and earning volatality.

2.7.1.7 Liquidity

Liquidity measures firm's ability to meet its financial obligations. Firms with more liquid assets have less potential of default and bankruptcy and more financial flexibility. The financial flexibility of the firms encourages firms to employ debt as an alternate source of financing. Firms with poor liquidity find it hard to service debt therefore a negative relationship between the debt financing and liquidity can be hypothesized. Many of the researchers have found robust results for establishing negative relationship between capital structure and the liquidity of the firm.

Sr. No	Determinants of Capital Structure	Literary Evidences
7	Liquidity	Hoshi, Kashyap and Scharfstein, (1991) Ozkan, (2001) Anderson, (2002) Deesomsak, Paudyal, and Pescetto, (2004) Low and Chen (2004) Amihud, and Mendelson, (2005) Eriotis, Vasiliou, and Ventoura-Neokosmidi, (2007) Lipson and Mortal (2009) Sibilkov, (2009)

Conclusion: The proportion of liquid assets in the assets structure of the firm signals short term solvency to meet the financial obligations. Positive relationship has been found in literature.

H7: There is a positive relationship between capital structure and liquidity.

2.7.1.8 Firm Specific Interest Rate

Interest as cost of debt play important role in the debt financing. Prevailing market interest rate and the risk return profile of the debt securities, nature of debt covenants and time to maturity determine the cost of debt of a specific firm. Over time, the real cost of debt may change in response to random shocks and changing capital market settings. The real interest rate of the firm if turns unfavorable over time; firms have several options to correct the situation by readjusting capital structure as a part of hedging strategy. Theoretical and logical arguments can be found in the finance literature in favor of this supposition. The following studies have considered this important factor as determinant of the capital structure decisions. It is hypothesized that in case of developing economies like Pakistan where debt market is on infancy stage this factor would have significant impact on capital restructuring decisions.

Sr. No	Determinants of Capital Structure	Literary Evidences
8	Firm specific Interest Rate	Jalilvand, and Harris (1984) Wald, (1999) Ooi, (1999) Deesomsak, Paudyal, and Pescetto, (2004) Haas, and Peeters, (2006)

Conclusion: A negative relationship has found in literature between firm specific interest rate and leverage.

H8: There is a negative relationship between capital structure and firm specific interest rate.

2.7.1.9 Spontaneous Financing

Creditors and accruals have no substantial cost for the firm. Spontaneous financing as an alternate source of financing, is advantageous for the firm. Not all firms can enjoy this free ride. Firms operating in environment where bargain power of customers and bargain power of the suppliers is comparatively low can enjoy this luxury. In connection with capital structure decisions two competing arguments can be presented. First, firms having more spontaneous financing would not depend heavily on the negotiated financing and will reduce the cost of capital, second firms already having enough spontaneous finance would have already reached to the saturation point and would go for negotiated financing. the following studies have considered the role of spontaneous financing in capital structure decisions and found significant relationship between the two.

Sr. No	Determinants of Capital Structure	Literary Evidences
9	Spontaneous financing	Deesomsak, Paudyal and Pescetto, (2004) Nivorozhkin, (2004) Haas, and Peeters, (2006)

Conclusion: In literature negative relationship is found between spontaneous financing and leverage ratios.

H9: There is a negative relationship between capital structure and spontaneous financing.

2.8.2 Determinants of Adjustment Speed

It is well documented in finance literature that optimal utilization of capital is highly desirable. By constructing an optimal mix of debt and equity firms may reduce the financing cost and lever the returns of residual owners of the firm resultantly the value of the firm. However, optimality is not directly observable and static according to the dynamic tradeoff theorists. The firms may deviate from their targets due to business dynamics and firm specific factors (Dudley, 2007). Firms strive to revert to the optimality by making changes into the capital structure which is referred to as capital structure adjustments. The adjustments are affected by various exogenous and endogenous factors (Drobetz and Wanzenried, 2006). The exogenous variables include macroeconomic factors which may make economically viable for firms to adjust their capital to the target level or impede the adjustment by making adjustment a costlier tradeoff. In last few years many research studies have been conducted to discover the impact of macroeconomic factors on the adjustment speed of the firms. The literature suggests many factors which may affect adjustment speed directly or indirectly. The factors consistently proved significant determinants of the adjustment speed have been identified and incorporated in this study.

2.8.2.1 Inflation Rate

Volatile inflation affects the capital structure in several ways. Lending during high inflation period reduces the real returns on debt investment thus makes debt investment less lucrative. Lenders during high inflationary periods require higher interest rates to bring real returns to the risk acceptable level (Gaud, et al. 2005). Resultantly borrowing during high inflation period increase the cost of debt therefore makes capital restructuring through debt costlier. Thus firms prefer to stick with their existing debt covenants. On this analogy negative relationship between adjustment speed and volatile inflation is hypothesized. Frank and Goyal (2009) also indicated the role of expected

inflation in market leverage. Despite the fact that their methodology and research objectives were different but one can easily infer the relationship between the inflation and the borrowing and lending decisions.

Another theoretical notion is that inflationary trends do inflate nominal profits and market values of equity *ceterus paribas*. However the existing debt is less sensitive to the inflation owing to fix payments of interest and principal. Difference in sensitivity of debt and equity to inflation rate takes the actual capital structure away from the optimal level. Kim and Wu (1988) reported in their empirical research findings that during high inflation period the yield difference between corporate debt securities and government debt securities is higher. Due to higher interest rate spread the corporate debt also increase. This notion implies a positive relationship between volatile inflation and adjustment speed. Moderate and consistent inflation is healthy for industry however the volatile inflation develops state of economic instability.

A third view is that the relationship between capital structure and inflation is not clear in absolute terms. Hochman and Palmon (1985) reported that the relationship between debt to asset ratio and the inflation without controlling for prevailing taxes is not clear. The taxes mediate the direction of the relationship between leverage and inflation. Santaella (2001) in a very basic study of impact of inflation on leverage found no significant relationship between two variables. Thus the relationship is not clear, however we hypothesize the relationship as under.

H10: There is a positive relationship between volatile inflation and capital structure adjustment speed.

2.8.2.2 Gross Domestic Product Growth

GDP growth as a proxy for the economic conditions of the country plays an important role in shaping financial policy of the firms. Levy and Hennessy (2007) gave a comprehensive description that why capital structure choices vary in different economic conditions. They reported that in expansion firms substitute debt with equity and in contraction period they tend to decrease the debt in their mix of capital. Hackbarth, Miaoand and Morellec (2006) specified the role of macro-economic conditions on the financial policy of the firms in their model. Korajczyk and Levy. (2003) hypothesized that capital structure adjustment speed is a function of macro-economic conditions. They divided their sample into two groups financially constraint companies and unconstraint companies and reported that for financially unconstrained companies' target capital structure has inverse relationship with the business cycle which they call counter cyclic. However for financially constraint companies the relationship of target capital structure and business cycle is positive means pro cyclic. GDP growth has been included as proxy for financing requirements of the firms. Higher GDP growth is characterized by higher profits and industrial expansion. During economic growth firms expand their capacities and invest in new projects. In economically good periods financial markets also perform well and investors are motivated to invest. Firms in economically good periods have more availability of funds compared to the bad economic conditions (Cook and Tang 2010). GDP growth as a generally accepted measure of economic growth affects the financing choices of the firm. It is hypothesized that the GDP growth has positive impact on the capital structure adjustment speed. Inflation adjusted GDP growth is included as the inflation is also explanatory variable of the model. Annual data of constant dollar GDP growth rate is imported from the MATADATA database of United Nation's database.

H11: There is a positive relationship between GDP growth and capital structure adjustment speed.

2.8.2.3 Interest Rate

It is well document in the finance literature that interest rate volatility affects the term structure of the debt securities (e.g., Cox, Ingersoll and Ross, 2005; Dieffenbach 1975; Richard, 1978). Interest rate volatility affect the borrowing options of the firms in different various ways for instance it affect the asset pricing, interest rate risk and cost of borrowing for the borrowers. Prevailing market interest rate is included to capture the impact of cost of borrowing on the adjustment speed. Cost of borrowing is an important factor in financial decisions and consequently the speed of adjustment. During periods of high interest rates the cost of debt is higher thus makes debt a costlier choice. During low interest rate periods the firms strive to swap their costlier debt with the cheaper one. Therefore a negative relationship between interest rate and speed of adjustment is expected.

H12: There is a negative relationship between interest rate and capital structure adjustment speed.

2.8.2.4 Banking sector performance:

Debt market of Pakistan is not developed enough to cater the financing needs of the firms. Nishat, (2012) attributed this inefficiency to the regulatory framework. Debt instruments are not very popular in Pakistan; therefore firms have to heavily rely on the banking sector for their short term and long term debt requirements (Arif, 2007). Banking sector performance is expected to have positive impact on the adjustment speed of the capital structure. Well-functioning banking sector is essential for the industrial development of any economy but for the developing economies where bank performs very critical role as financial intermediary the role of banks is crucial (Haque, 1997). Thus the banking sector performance has been included as explanatory variable and positive relationship with adjustment speed is expected.

H13: there is a positive relationship between banking sector performance and capital structure adjustment speed.

2.8.2.5 Deviations from the target capital structure:

Deviation from the target capital structure is a costlier variance and firms strive to revert to the optimal level by making adjustments in the proportion of debt and equity. Drobetz, and Wanzenried (2006) found that in the presence of adjustment cost firms may not fully revert to the desired level of capital structure. The cost of adjustment impedes the adjustment speed. The discrepancy between the target and actual capital structure is the problem which firms strive to solve with the available means. This distance is the motivation behind restructuring of capital. Flannery and Rangan (2006) applied partial adjustment model to observe how firms reconcile the gap between target and actual capital structure in the presence of the difference between the two. Faulkender et al (2008) also found that the deviation from the target level initialize the adjustment process. If the firms have actual capital structure just equal to the desired level there is no reason to change it.

H14: There is a positive relationship between deviations from target capital structure and capital structure adjustment speed.

2.8 THE RELATIONSHIP BETWEEN CAPITAL STRUCTURE AND FIRM'S PERFORMANCE

Most of the existing Capital structure studies in Pakistan assess the relationship between financial leverage and firms' performance in the framework of static determinants of capital structure (see e.g., Shah, Hijazi and Javed, 2004; Hijazi and Tariq, 2006; Shah and Khan, 2007; Rafiq, 2008; Ilyas, 2008; Ahmed, Ahmed and Ahmed, 2010; Ahmed and Wang, 2011; Afza and Hussain, 2011; Memon, Bhutto and Abbas, 2012; Shaheen and Malik, 2012; Saleem, et. al., 2013; Ahmad and Zaman, 2013). The existing literature about the relationship between capital structure and financial performance in Pakistani context can be grouped into two streams. Few studies, in accordance with

the pecking order theory have found negative relationship between the capital structure and financial performance (Raza and Wajid. 2013; Khan, 2012; Shah and Khan, 2007; Amjed 2007; Rafiq, Iqbal and Atiq, 2008). However, some studies have also found positive relationship and attested the claims of tradeoff theorists (see e.g. Sadeghian et al 2012; Memon, Bhutto and Abbas, 2012; Chaganti and Damanpour, 1991). The reason of this dichotomy can be attributed the methodological differences and models. All the aforementioned studies assumed a direct relationship between the leverage ratio and profitability of the firm. Other factors mediate the relationship and make it an intricate decision. Research about impact of high or low leverage on financial performance without considering the firm specific and environmental factors may have little or no practical value.

It is an established view that efficient utilization of capital is imperative for the financial efficiency and effectiveness of the firm. Financial policy of the firm does affect the performance of the firm in various ways (Margaritis, and Psillaki, 2007). Capital structure efficiency is not directly observable from the capital structure ratios. The capital structure in absolute terms does not indicate efficiency. Thus the impact of capital structure or financial performance may indicate the nature of relationship but may have methodological questions.

The proponents of tradeoff theory have consensus that firms have target level of capital structure and firms actively pursue that target level (Myers, 1984). Firms target to what? The answer is optimal capital structure which is mix of debt and equity where the cost of capital is low. The adjustment speed allows firms to bring their actual capital structure closer to the target level which is optimal for that particular firm. The positive relationship between adjustment speed and firms' performance is consistent with dynamic tradeoff model. Firms closer to their target (Optimal) capital structure are considered financially efficient. By deploying debt, which is cheaper source of capital compared to equity, firms can carve out bigger slice of profit for the equity holders. The dynamic

tradeoff theory appears to have more implications for volatile economies. In accordance with the dynamic tradeoff theory it is hypothesized a positive relationship between the adjustment speed and firms performance.

H15: There is positive relationship between the capital structure adjustment speed and financial performance of the firm.

2.9 COST AND AVAILABILITY OF CAPITAL: A GLOBAL PERSPECTIVE

On the analogy of law of supply, the cost of capital to certain extent depends on availability of the capital. The cost of the capital to the firms operating in illiquid and segmented capital markets cannot be compared with those operating in the liquid and non-segmented capital markets. Due to the difference in the availability of capital and difference in financing options, technically called depth and width of capital markets, the firms' capital structure and the capital structure decisions would have a significant difference as reported by Booth et al.(2002). The domestic firms operating in illiquid and segmented capital markets may find it difficult or/and costly to adjust the proportion of debt or equity in their capital mix. The optimal or appropriate capital structure at one time may not be optimal at any other time due to many changes in the parameters of the firms on which the decision was initially made (Mukherjee and Wang, 2013). With this handicap the firms may not be able to adjust their capital according to the changing market conditions unless the incentive for adjustment greater than the cost of adjustment. Generalizing the capital structure theories to the developing economies like Pakistan without considering the fundamental differences in the nature and character of the capital markets would have little value in understanding the theory of capital structure. The context of the theory is one thing and the theory itself is another thing for complete understanding both elements should be understood completely. Theory without context is not helpful for understanding the underlying claim of the theorist. It is pertinent to develop a context and

reference point for the issue under debate. This section will serve as context for capital structure theory and also to this research.

The only constant in this world is change. Many of the theories of social science which were advanced in the twentieth century have been obsoleted due to the rapid developments in the communication and information technologies. The developments in the technology and more specifically the information and communication technology have brought revolutionary changes in every field of life. The revolution in the field of Information and Communication Technologies has also affected the way corporations finance their long term investments and growth. The highest degree of global integration of capital markets as witnessed in the last few decades, which is clearly a result of the growing technologies. This global integration has enhanced the access of the firms to cheaper sources of funding and better availability. The global integration has also affected the liquidity of the small domestic capital markets as well as the financial environment. With this advancement domestic firms have more liberty and ease in capital restructuring and capital improvements if they have formulated and implemented proper strategy. This global integration of capital markets has also provided an opportunity to the firm access new avenues for financing which were previously not available. Due to globalization the financial environment has also changed. With this emerging environment and financial setups the nature of the capital structure question has changed. The flexibility in the restructuring of the capital is the one of the major determinants of the organizational success in the short run as well as in the long run.

2.9.1 The duality of debt finance

The conventional wisdom of capital structure signifies that in the presence of the tax advantage of debt, the firm can increase its value by employing a debt for financial assets and growth opportunities. The tax benefit of debt is an established factor to employ debt in the capital structure.

In many countries, including Pakistan interest is a tax deductible expense. The tax deductibility of interest expense reduces the taxable income of the levered firms, which results in lower taxes and higher cash flows compared to unlevered firms. The return on equity of the levered firms is higher under certain conditions which lead to higher values of the firm. The other major advantage of debt financing is a control mechanism. Debt financing requires repayment of interest and principles which reduces the room for the management to make investment decisions in their personal interests (e.g., Jensen and Meckling, 1976; He, 2011; Hart and Zingales, 2011; Degryse, Goeij and Kappert, 2012). In the presence of the debt management is compelled to generate positive cash flows to meet their financial obligations. Thus, debt reduces the agency problem which exists between shareholders and management.

The cost of financial distress which is also referred as cost of actual or expected bankruptcy is attributed to the debt. The creditors can demand liquidation if the firm is unable to meet its financial obligations. The probability of bankruptcy increases with the increase level of debt, especially for the firms which are operating in a risky environment (Molina, and Preve, 2012). Even if the actual bankruptcy does not happen the firm may lose value during the period of financial distress which is called indirect cost of financial distress. Since the cost of debt is a fixed cost it increases the financial leverage ratio, which is an indicator of financial risk and the cost of debt increase proportionately (Elkamhi, Ericsson, and Parsons, 2012). To compensate the financial risk creditors demand higher returns. With the increased level of debt in capital structure the cost of debt increases.

Another perspective of agency problem is the use of borrowed funds by management in risky activities to generate more returns for the shareholders contrary to the debt covenants. The demand of creditors for strict compliance of the debt covenants may also reduce the effectiveness of the

financial decisions (e.g., Mauer, and Sarkar, 2005; Miao, 2005; Berger, and Di Patti, 2006;). Therefore, it is considered that the actual agency relationship exists between the lenders and the management. The debt covenants reduce the financial flexibility of the firms. Firms operating in uncertain environment may not able to forecast their future financial needs. To meet the contemporary financial needs management has to pay the higher cost of debt. Information asymmetry is another significant cost of debt; management may not disclose the business information to the creditors for business reasons. This asymmetry of information may lead to higher cost of debt (e.g., Gaud, Hoesli, and Bender, 2005; Bharath, Pasquariello and Wu, 2009; Halov and Heider, 2011). Creditors need security for their funds in form of collaterals. Lack of collateral assets may increase the cost of debt. These indirect costs make debt financing costly under certain set of conditions.

Due to the fact, tax advantage of debt increases the cash flow, which results in increased value of the firm. The Tax advantage of debt after specific level decreases the marginal benefit and gradually turned to negative due to the increased level of risk. The cost of excessive debt in the capital structure swallows the tax advantage (Korteweg, 2010). The breakeven point of the cost and benefit of debt is called optimal capital structure. If it would be possible to objectively measure these costs and benefits, the issue would be easy to resolve. At present the impact of debt on the business firms is beyond the scope of any model. Therefore the optimal level of debt is still an abstract and has not got the shape of understandable and testable theory (e.g., Blouin, Core, and Guay, 2010; Graham and Tucker, 2006; Binsbergen et.al, 2010). The whole debate on capital structure revolves around this hypothetical optimality which is still unclear.

2.9.2 Capital structure puzzle

The theorists tried to calibrate the complete set of common parameters for this complex and highly significant agenda of finance research. Beside all the sincere endeavors of theorist the capital structure issue is still unresolved. No any theory fully capable to provide a comprehensive explanation of capital structure and empirical model which can provide uniform statistical evidences. The theoretical explanations of financing decisions appear very appealing and convincing, but empirical evidences are more often contradictory and confusing. Some basic reasons of this dichotomy are inferred after extensive literature review. One of the reasons for this disparity is the implied assumption of the theorist that the financial system is fully capable to cater the financing needs of the firms and firms are free to make adjustments in capital structure on the basis of preferred sources of financing (Barclay, and Smith, 2005). This is also a debatable issue that how these preferences are shaped and reshaped but primarily theorists assume that firms have no environmental bounding in financial decisions. Agency theory, however, to some extent considers this binding, but from some other perspective. Another important reason of discrepancy between theory and its empirical results is the fact that capital structure decision is not static (Ju et.al, 2005). To give one point optimal level of leverage is practically not possible as the optimality is subject to many cognitive and personality factors of the decision maker and environmental factors (Antonczyk and Salzmann, 2014). This is pertinent to mention here that psychological and cognitive factors become more effective with the level of ownership concentration and control. The strong control provides room for autocratic decisions as argued by Jensen and Meckling (1976).

2.9.3 Towards the solution of capital structure puzzle

Under the aforementioned form of discussion, it is inferred that capital structure is the result of financing decisions consciously made by management to optimize the leverage which is consistent

with the contemporary financial system. The intended optimal capital structure which is also referred as target capital structure is strived to achieve. The target or desired capital structure is unique to every firm and at an aggregate level to every industry. Firm specific factors influenced by the environment can help to estimate the target capital structure. Firms strive to achieve optimal level of capital structure by balancing the cost and benefit of debt financing keeping in view the financial environment. The outcome of capital structure is the weighted average cost of capital, which in turn becomes the basic parameter for investment decisions. A proper mix of debt and equity reduces the cost of doing business and helps to achieve the ultimate objective of business firm i.e. maximization of owners' wealth. We assume that decision makers are better aware of the unique optimality which changes over time and optimality is firm and time variant phenomenon. Optimality is shaped and reshaped by the changes in the financial environment and firm specific factors, for instance the specific cost of debt for a particular firm can affect the optimality. Finance managers cannot be considered ignorant of this fact, the results of many studies indicate that the managers targets optimal debt equity ratio see for example Graham and Harvey (2001) and Brounan et al (2004). They strive to achieve this optimal level of financial mix by revising their capital structure on the basis of screening and analysis of firm specific and environmental factors. The speed of achieving desired capital structure, which is of course optimal for the firm, depends on the firm specific and environmental factors. This study imperially explores the dynamic adjustments towards capital structure and reports the results on the basis of firm level and industry level data.

Existing literature on the capital structure focuses on the parameters for the capital structure decisions by using different methodologies and the theoretical perspectives. This study empirically investigates the factors determining the target (desired) capital structure. The determinants of capital structure are portable to every economy depending on the socioeconomic environment of that

particular economy. Through the analysis of large pooled data set most reliable and consistent firm specific factors of target capital structure choices have been found. The adjustment speed towards target capital structure been observed and linked to the macroeconomic indicators and firm's attributes.

The organizational structure of the business firms is an important reference point in financial structure decisions (Michaelas, Chittenden and Poutziouris, 1999). The parameters and standards for financial structure decisions in public companies, private companies, single member companies, family controlled business units, partnerships and sole proprietorships cannot be considered the same (Hoshi, Kashyap, and Scharfstein, 1991). Different organizational structures give different degrees of control to the parties affected by such decisions. Organizations like the partnership and the sole proprietorship higher degree of the control rests with the owners who are residual beneficiaries (Berger and Udell, 2002). The agency problem is less severe in such organizations and thus financial structure decisions are easy to make and execute (Ang, Cole, and Lin, 2000). In the business organizations where the financial decisions are made by the agent (management) on behalf of the principle (ownership) financial decisions become more complex and challenging. Most of the studies on capital structure have been done in the non-financial corporate sector. One of the reasons to focus this segment is the fact that agency problem is much severe in case of corporations than any other form of business organizations. In presence of agency issue the financial structure decisions are more complex and critical because decision makers have not only to balance the capital structure, but also have to balance the personal interests with the financial performance of the firm.

CHAPTER NO.4

METHODOLOGY

This chapter presents the research philosophy, research strategy, nature of data, sampling method, techniques and procedures. Positivism and interpretivism are the two broad philosophical research paradigms in the business and economics research. However, pragmatism and realism have also emerged as preferred research philosophies in various business and economics studies. The choice of research philosophy is mainly determined by the research objectives and practical implications of the study. Even, the quantitative studies in economics and finance have significant philosophical difference depending on the data and methods applied in research. The selection of any particular research philosophy has been subject of considerable debate for many decades. Therefore it is difficult to justify the selection of research philosophy in precise manners. After the brief introduction of various research doctrines the selection of the research philosophy and epistemology has been justified in this chapter.

4.1 RESEARCH PHILOSOPHY

The four major philosophical research doctrines are; (1) Positivism (2) interpretivism (3) pragmatism and (4) realism. Positivist believe that all knowledge is objectively testable by observation and facts eternally exist. On the other hand the interpretivism also called antipositivism adheres the belief that social realm is not necessarily objective rather there are subjectivities stemming from cognitive abilities of the researcher. Positivism and antipositivism paradigms are two contrary doctrines about the creation and acquisition of knowledge. However, pragmatism and realism are moderate views towards the nature and source of knowledge. Pragmatists hold the view that only the concepts

supported by human actions are acceptable and there is no any universal way of describing the facts rather there are multiple ways to describe the fact. Similar to positivism, realism as a research philosophy base on the principle that reality is independent to the researcher.

Literature suggests that there are certain principles to guide the researcher about the philosophical division of the research. If the scholar is independent to the observed phenomenon, human interests does not affect the research findings, research used deductive approach, the concepts can be quantified, units of analysis could be simplified to the generally observable level, the results could be generalized through statistical probability and sample consists of large numbers randomly selected. According to the aforementioned guideline this study merits the positivism. This study is based on the quantifiable observations which are empirically analyzed and tested. The conclusions drawn from the empirical analysis are objective therefore the personal judgment of the scholar does not affect the research findings. This study adheres to the philosophy of positivism. Keeping in view the methods and objectives of this research we classify this study as deductive research. A deductive approach has been applied as the testable hypothesis are developed in accordance to the capitals structure theory.

4.2 DATA AND SAMPLING

Dataset consists of financial data of non-financial companies listed at Karachi Stock Exchange during 1999 to 2011. During the period of study Economy of Pakistan has passed through various economic and political eras. The period offers a great opportunity to study corporate financial policy in highly volatile economic conditions. Financial data was extracted from "Balance Sheet Analysis" of non-financial companies published by SBP (State Bank of Pakistan). SBP publishes a comprehensive analysis of annual audited financial statements of the public listed companies every year. In Pakistan, Balance Sheet Analysis is considered trusted and convenient

source of data of public listed non-financial companies. For this publication SBP uses the KSE's industrial classification except small economic groups Tobacco, Jute, Vanaspati and Allied and others which are clustered as miscellaneous. The same classification has been adopted for analysis in this research.

Few companies were not consistently listed throughout the thirteen year period were excluded from the data set. The total companies included in BSA by the end of 2011 were 399, out of these 312 companies qualified as a sample of this study. Total public listed companies by end of year 2011 were 616 and selected companies are approximately 50% of the total public listed companies which is good representation of non-financial sector. The data was sorted annually and industry wide and analysis were conducted accordingly. The data of few companies were missing in some years. The data of such companies were included for estimation of determinants of target capital structure. Estimation of adjustment speed is only done with data of thirteen years. There were about 4000 firm/year observations. Some extreme values in a particular year may appear because of unusual or extra ordinary reasons; inclusion of such values may distort the overall results. For statistical accuracy and robustness of the results certain adjustments in the sample were made. To exclude outliers from the data various methodologies could be applied. One frequently used technique to remove data outliers is Winsorization. This approach restricts the observed values to the specified limits of the distribution tails. The values beyond that limit are converted to the value of the value at specified limit that can be 5% or 10%. The other approach is to exclude the extreme observed values to the acceptable limit which is normally two standard deviations plus-minus. The former approach is used when the number of observation is limited and researcher doesn't want to decrease the observation. When number of observation are more the second approach yields robust results. For this study we have used two times standard deviation plus minus to the mean value

approach. This technique excludes certain values but do not affect the robustness of the results. The values under the later technique are real values and thus true representatives. Thus we used two standard deviation from the mean value method because of its advantage over the Winsorization.

Table 4.1: Sector wise list of companies in BSA and selected sample of the study

Economic Groups	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Sample
Cotton and Other Textiles	239	232	225	208	199	189	182	181	180	182	167	164	155	150
Chemicals	39	39	38	36	38	36	34	34	34	35	36	33	35	29
Engineering	47	48	47	46	44	42	41	41	41	40	38	36	32	30
Sugar and Allied	38	38	37	37	37	35	35	35	36	36	36	54*	54*	30
Paper and Board	14	14	14	14	13	12	12	10	10	10	9	9	8	8
Cement	21	21	22	22	22	22	22	22	20	21	21	22	22	14
Fuel and Energy	28	27	26	24	24	25	28	28	27	27	27	25	25	22
Transport	6	7	7	7	7	13	15	12	12	12	13	13	11	5
Miscellaneous	98	94	90	87	79	77	74	73	77	74	67	65	67	24
Total:	530	520	506	481	463	451	443	436	437	437	414	411	399	312

Source: Balance sheet analysis of non-financial companies from year 1999 to 2011, published by SBP
*From 2010 to onward Sugar sector has been merged with food sector.

Financial sector include companies engaged in banking and non-banking financial business like insurance, mutual funds, investment banking, specialized financial institutions etc. Parallel to other capital structure studies, it is presumed that the parameters of capital structure decisions in financial sectors are significantly different than non-financial sector (Ittner et.al, 2003; Michaelas, Chittenden and Poutziouris, 1999). Financial sector is more regulated than non-financial sector therefore capital structure decisions are affected by exogenous factors. It is well documented in capital structure studies that financial decisions of financial firms are more sensitive to the country specific regulations and global practices (see Amelet et. al, 2004; Pasiouras,Tanna and Zopounidis, 2009: Berge, 2000). Therefore, capital structure of the financial firms and non-financial firms are not directly comparable in terms of objectivity and operations. To avoid inconsistency and increase inter industry comparability financial sector has been excluded from the scope of study. Exclusion of financial sector do not necessarily mean that the results of this study cannot be generalized to the financial sector in principal. The results may be generalized to the financial sector and public sector organizations with structural adjustments.

Financially distressed firms have been excluded from the scope of the study. The equity turned negative when accumulated losses swallow net worth of the firms. It is conventional wisdom that negative equity firms suffer financial distress and lose financial liberty in making decisions. The decisions of financially distressed firms are influenced by many factors other than firm specific economic factors (Sudarsanam and Lai, 2001). Return on Equity, for negative equity firms, is meaningless and not directly comparable with normal firms. Therefore firms having negative equity and persistently negative returns were considered outlier and excluded from the dataset for reliable and robust results.

Industrial classification is done with different schemas depending on need and purpose of classification. Different constituencies classify firms in different ways; most widely used classification is Standard Industrial Classification (SIC). SIC codes are globally recognized and used besides that many countries use their own classification. In Pakistan multiple methods for classification of the industries are used. However, for this study State Bank of Pakistan's industrial classification has been used to group the dataset into industry.

Sample of this study is all non-financial companies which remain listed during the study period and qualify the following criteria.

1- Non-Financial Firm listed on the Karachi Stock Exchange.

2- Firm which remained listed for the period of 1999 to 2011

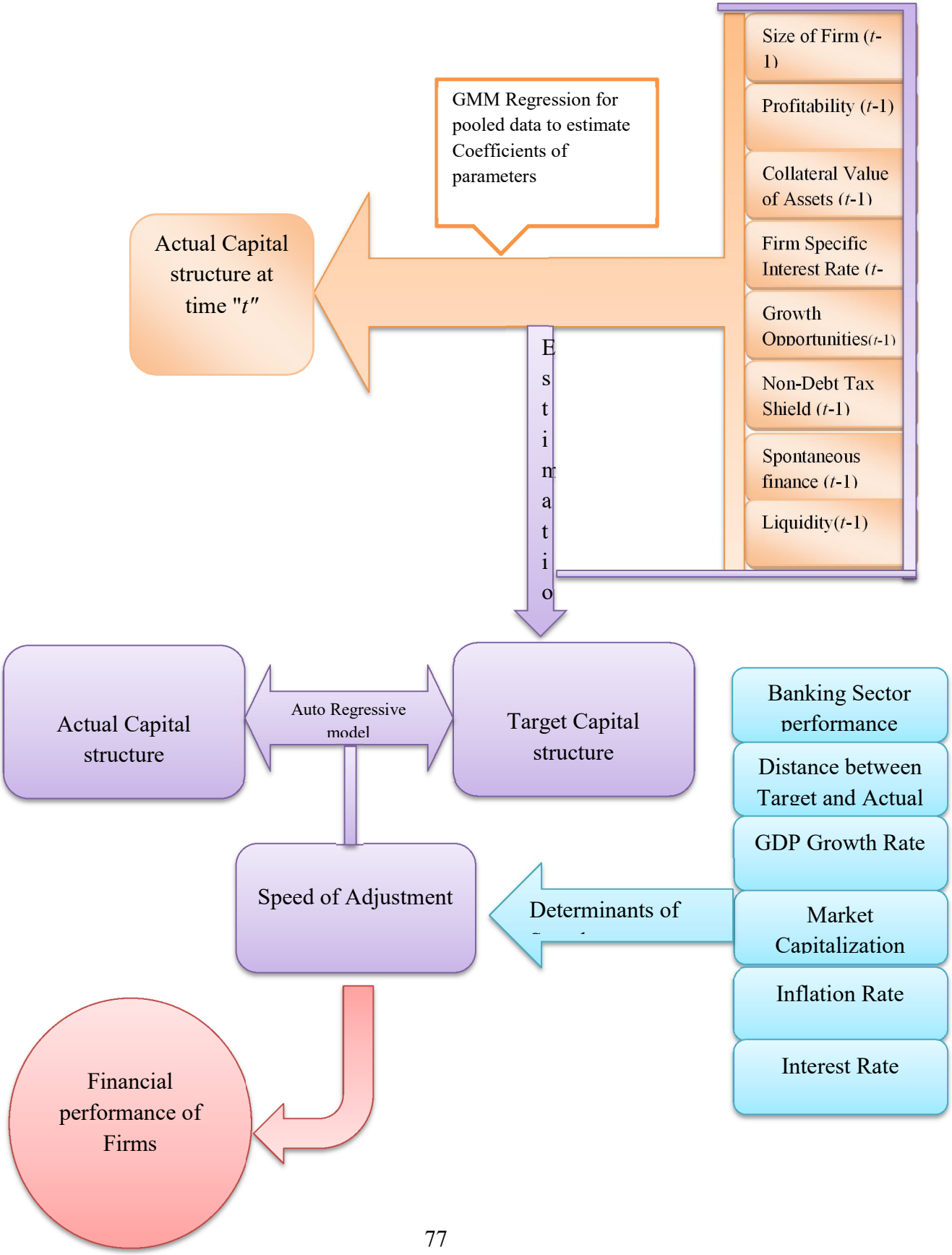
3- Firms which have included in BSA over the period of study

Firm level data was taken from the BSA, which contains annual accounting data of the audited financial statements of non-financial companies listed on Karachi Stock Exchange. Accounting data has its own advantages and disadvantages, significant number of the studies of capital structure have used accounting data because of the fact that financial decisions are made on the basis of accounting information (Hopwood, 1972). This study aims to elucidate the implication of capital structure in some designated point in time, retrospectively. Market values are forward looking and may have the bias of future expectations therefore the book values are intentionally used to avoid any such biasness (Beaver and Ryan, 2000; Sloan, 1996; Kothari and Shanken, 1997). One observation consists of all variables of study for one year of a specific company. All the variables are ratio scale variables.

Macroeconomic data is taken from the World Bank MATADATA database of countries macroeconomic data. The database is maintained and updated by World Bank. The data is exported from the site in M.S Excel format. More than 400 variables are included in the database and various

measures have been taken for individual variables. Out of these measures more consistent measures have been selected on the basis of literature review and variable diagnostic methods.

4.1 GRAPHICAL PRESENTATION OF THE MODEL



4.4 ESTIMATION SCHEME

The considered model in this study is a multi-tier, holistic model of financial policy of the Pakistani firms. The study aims to investigate the dynamics of target capital structures. Target capital structure is not directly observable therefore parameter coefficients are estimated for the target capital structure by Pool Data Regression method as a first tier. It is assumed that all variances are not constant over time and across firms. Thus random effect model was used to estimate the parameter coefficients. The estimated coefficients were used to estimate the target capital structure of the individual firm *i* for time *t.* As a second tier, by applying autoregressive model the speed of adjustment is estimated for every period separately by applying cross sectional data of that particular time period. An overall corporate level annual adjustment speed as well industry level annual adjustment speed is estimated by running separate regression equations. At the third level the determinants of adjustment speed are estimated by balance panel data technique. The annual adjustment speed of five industrial group forms a balanced panel of independent variable and various macroeconomic factors and industry specific factors as independent variable. The determinants are estimated through fix effect model; industry fix effect is estimated and reported as an evidence of industries' specific factors affecting adjustment speed of the firms. The last tier is for impact of adjustment speed on the financial performance of the firm. The debate is concluded with the discussion of effectiveness of adjustment speed. For various tiers of the study various estimation techniques and econometric model are specified based on the underlying objectives and nature of the data. The models are discussed separately with due justification in subsequent sections.

4.1.1 Variables

Factors affecting target capital structure have been selected after extensive literature review. Only those firm specific factors which have proved most powerful determinates of the capital structure by the existing literature are considered. The variables used in different research studies other than the set of variables given below were not included on the basis of their inherited statistical limitations. For instance age of firm, income volatility and ownership concentration are reported explanatory variable of the capital structure. Inclusion of these variables at face value without adjusting for autocorrelation and hetroscedasticity may affect the robustness of results and estimations. Since, the study already includes time proved representative set of regressors the exclusion of such variables do not affect the results seriously.

Table 4.2: List of Variables

	Variable	**Symbol**	**Measurement Scheme**
1	*Size*	SIZE	Natural Log of Total Assets
2	*Profitability*	ROA	Net profit After taxes over Total Assets
3	*Collateral value of Assets*	CVA	Net fixed assets over total assets
4	*Firm specific Interest Rate*	FSIR	Financial charges over sum of fixed liabilities and negotiated finance
5	*Growth opportunities*	GRTH	Percentage change in sales from previous year
6	*Non-debt tax shield*	NDTS	Non-cash expenses over sum of net fixed assets
7	*Trade credits*	SPTF	Spontaneous finance over total liabilities
8	*Short term solvency*	STS	Current Assets over current liabilities
9	*Long term debt to assets*	LDA	Long term debt over total assets
10	*Total debt to Assets*	TDA	Total debt over total assets
11	*Contracted debt to assets*	CDA	Contractual debt over total assets

4.1.2 Statistical Model

In various econometric models the impact of predictor on the predictand is not simultaneous, especially when the predictand is not directly observable. The explanatory variable in such cases

have more explanatory power with period-lags. With lagged explanatory variables the desired or unobservable explained variable is estimated. Dynamic econometric models like autoregressive and distributed-lag models are applied in such cases. Target capital structure is not directly observable, it is the expected value based on the past experiences. Thus following Flannery and Rangan (2004) and Huang and Ritter (2009) one period lagged firm specific time variant factors have been regressed with the capital structure to estimate the parameters of target capital structure. The justification for use of one period lagged determinant is the assumption that Finance Manger is well aware of the determinants at the time of making capital restructuring decisions. Second, use of one period lagged variable can reduce the problem of endoginity, if exists. Third normally finance goals like capital structure and earnings are budgeted for one accounting period.

Following Drobetz and Wanzenried (2007), Hovakimian (2011), Oztekin and Flannery (2012), the following model to estimate the target capital structure is considered. Let the target capital structure "TCS^* " of a particular firm at time *t* be a linear function of firm-specific factors from X_1 to X_n. which were previously tested as determinates in cross sectional studies.

Mathematically the model can be expressed as follows:

$$TCS^* = F(X_1, X_2, X_3 \dots \dots \dots . X_n) \qquad (1)$$

TCS^* represents here the target apital structure as a function of various time and firm specific factors. In absence of adjustment cost, information asymmetries and transactions costs the observed capital structure $CS_{i,t}$ should be just equal to target capital structure i.e $CS_{i,t} = \vartheta_{i,t}(TCS^*_{i,t}$. If the adjustment is costly the firm may partly adjust to the dynamic target. The model implies that the target capital structure may vary over time and across firm. The data consists of a larger pool of approximately 300 cross section, belonging to five different economic sectors, observations of individual firms over 13 years period. It cannot be presumed in pooled data that coefficients are

constant over time and across firms. Thus OLS do not yield robust results as the basic assumption of OLS is the constant coefficients and singular residual error. Fix Effect Model are efficient for small pool data where number of cross sections and periods are less. In case of large pool, larger numbers of dummy variables are needed to incorporate to capture the fix effect, which mostly result biased results due to notorious dummy trap. Therefore Error Component Model (ECM) is used for coefficient estimation.

$$TCS^{*}_{i,t} = \beta_0 + \beta_{1,j} X_{i,t,j} + \mu_{i,t} + \quad \text{(1-A)}$$

Where $TCS^{*}_{i,t}$ is the target capital structure which is assumed equal to actual capital structure, if there is no adjustment cost, asymmetric information and transaction cost; β_0 is constant; $\beta_{1,j}$ are "*j*" number of capital structure determinant parameters of firm *i*; $X_{i,t,j}$ are *j* number of firm specific factors of firm "*i*" at time "*t*" and $\mu_{i,t}$ is the residual error.

Alternatively

$$TCS^{*}_{i,t} = \lambda_0 + \lambda_1 X1_{i,t} + \lambda_2 X2_{i,t} + \lambda_3 X3_{i,t} \dots\dots\dots + \lambda_N XN_{i,t} + \text{ɯ}_{i,t} \quad \text{(1-B)}$$

Where:

$\text{ɯ}_{i,t} = \varepsilon_i + \mu_{i,t}$

Where, "$X1_{i,t}$"represents the firm specific time variant vector, $\lambda_0$mean constant, λ_1 through λ_N are coefficients of parameters and $\mu_{i,t}$ is the error term. The subscript *i* is the *i*th cross sectional observation and *t* represents the time period. The parameters were estimated by using equation 1-C. Generalized Method of Moments (GMM) estimation procedures have been applied for statistical analysis due to some advantages over OLS. GMM is normally applied in the statistical models where the parameters are infinite dimensional. Literature suggests that semi parametric model yields robust results in case of unknown shape of distribution function. GMM is highly recommended when the number of cross sections are more than the number of time series observations. The literature

suggest that GMM is capable to resolve the heterogeneity problem, endogeneity problem and omitted variable bias (Caselli et al., 1996). Estimation of target capital structure by specifying the large number of moment conditions can result the best estimates by using semi parametric model if specified correctly. The literature also suggests that GMM estimators are more consistent, efficient and asymptotically normal among the available linear and non-linear estimators which don't use additional information other than the moment conditions specified in the data. With the suitable data and number of observations the GMM estimators provide the best estimate of the true parameters. GMM overcome the shortcomings of ordinary least square methods in multiple ways. It allows finding closer to true model parameters by processing the sample conditions movement only with maximum possible accuracy.

$$TCS^{*}_{i,t} = \lambda_0 + \lambda_1 SIZE_{i,t-1} + \lambda_2 ROA_{i,t-1} + \lambda_3 CVA_{i,t-1} + \lambda_4 FSIR_{i,t-1} + \lambda_5 GRTH_{i,t-1} + \lambda_6 NDTS_{i,t-1} + \lambda_7 SPTF_{i,t-1} + \lambda_8 STS_{i,t-1} + \omega_{i,t} \quad (1\text{-C})$$

Where:

$TCS^{*}_{i,t}$	Target Capital Structure	*ROA*	Profitability
λ_0	Mean constant coefficient	*CVA*	Collateral Value of Assets
λ_1 to λ_8	Slop coefficient	*FSIR*	Firm Specific Interest Rate
I	*i*th cross section observation	*GRTH*	Growth Opportunities
T	*t* period observation	*NDTS*	Non-debt Tax Shield
$\omega_{i,t}$	Composite Error Term	*SPTF*	Spontaneous Finance
SIZE	Size of firm		

Variables are instrumetnalized by taking one period lagged values of explanatory variables. By regressing one period lagged variable with the capital structure of the firm, parameters coefficient were estimated. The prime objective of the study is to estimate adjustment speed and its implication. Therefore, the nature of relationship between dependent and independent variables has not been specified in this section. However the magnitude and significance of the relationship is area of prime

concern. For estimation of parameter coefficients pool of time and firm variant vectors of 312 firms over 13 years period was used. Pooled regression has various econometric applications broadly fall into two main categories Least Square Dummy Variable (LSDV) regression and Error Component Model (ECM). LSDV is recommended when the number of cross sections or time series is less otherwise one have to compromise on the degree of freedom. In case of large sample with large number of cross sections and time series researcher can pray of dummy variable trap. Therefore, in case large sample with more cross sections and time series in the data ECM or also called Random Effect Model is preferred due to various statistical reasons. In case of fix effect model due to the existence of dummy regressors the chances of multicollinearity is higher. In OLS residual error is assumed to be normal and independent of regressors $\mu_{it} \sim N(0,\sigma^2)$, this assumption is rarely met by Dummy Variables. Therefore Error Component Model is used to estimate the unbiased coefficients of Target Capital structure parameters. Hausman test is used to determine the estimating efficiency of the model.

4.5 ESTIMATION OF ADJUSTMENT SPEED:

Jalivand and Harris (1984) were among the pioneers to apply dynamic models to study the financial policy of the firms. Banerjee, Hashmati and Wihlborg (2000) developed a dynamic adjustment model to estimate the adjustment speed towards the dynamic target. Their model got considerable attention and lot of studies have been conducted which applied their partial adjustment model (See e.g., Lööf, 2004; Flannery and Rangan, 2006; Drobetz and Wanzenried, 2006; Huang and Ritter, 2009; Cook and Tang, 2010; Hovakimian and Li, 2011; Öztekin and Flannery, 2012) Partial adjustment model is used to estimate the adjustment speed of capital structure towards the target level. Econometric literature suggest that distributed-lag model and autoregressive models, which are often referred to as dynamic models, best capture the impact of stimulus on the response

when the dependence is not simultaneous. Various considerable options were available including Ad Hoc Estimation of Distributed-Lag Models, KOYCK Approach to Distributed-Lag Models with Adaptive Expectations and Rational Expectation, and Partial Adjustments. Partial adjustment model has vast application in finance literature especially for CAPM and capital structure adjustment hypothesis. Partial adjustment model On the basis of peculiar merits Partial Adjustment Model is applied for estimation of Adjustment speed. The Desired Capital structure which is referred to as target capital structure is not directly observable. Therefore it is estimated through estimated coefficients of target capital structure in section 4.4.

In the capital structure adjustment speed models it is assumed that firm's target capital structure is just equal to actual capital structure in absence of asymmetric information, adjustment cost and transaction cost. Thus, without friction, the actual capital structure is assumed to be equal to the target capital structure. In normal discourse, the company management strives to achieve that level by making dynamic adjustments in the existing capital structure. All the firms may not succeed to adjust their capital as desired due to the cost of capital and limitation from the financial system. Adjustment speed may vary across the firms and industry as a whole. The adjustment speed is observed by the following equation.

$$CS_{i,t+1} - CS_{i,t} = \vartheta_{i,t}(TCS^{*}_{i,t} - CS_{i,t}) \qquad (2)$$

Where: $CS_{i,t+1}$is the observed capital structure of firm *i* at time *t+1,*; $CS_{i,t}$is the observed capital structure of firm *i* at time *t,*; $\vartheta_{i,t}$presents the annual adjustment speed if its value is 1 it means 100% adjustment if the value is 0 it means zero adjustment in one particular year. $TCS^{*}_{i,t}$ is the fitted value of capital structure of firm *i* at time *t*. The extant literature show that both single step and two step approaches are used by scholars to estimate the adjustment speed. In two steps the target capital

structure is estimated in first place and the speed of adjustment in second step. Some studies have used single step to estimate the adjustment speed.

With mathematical transformation in the above equation we come up with the following equation. This form provides better understanding and ease of interpretation.

$$CS_{i,t+1} = CS_{i,t} + \vartheta_{i,t}(TCS^{*}_{i,t} - CS_{i,t}) + \mu_{i,t} \qquad (2\text{-B})$$

The value of $\vartheta_{i,t}$is always between "0" to "1". Zero implies that there is no adjustment in the capital structure towards target and 1 means that 100% adjustment. Hundred percent adjustment is not possible when there are frictions in the market. Therefore there is always a gap between actual and target capital structure. By replacing the $TCS^{*}_{i,t}$ with the left hand side of equation 1-A, we get the equation 2-C:

$$CS_{i,t+1} = CS_{i,t} + \vartheta_{i,t}(\beta_0 + \beta_{1,j}X_{i,t,j} - CS_{i,t}) + \mu_{i,t} \qquad (2\text{-C})$$

Alternatively we can write equation 2-C:

$$CS_{i,t+1} = \beta_0\vartheta_{i,t} + \left(1 - \vartheta_{i,t}\right)CS_{i,t} + \beta_{1,j}\vartheta_{i,t}X_{i,t,j} + \mu_{i,t} \qquad (2\text{-D})$$

Where;$\vartheta_{i,t}$is adjustment speed measured as parameter for the direction and magnitude of adjustment in capital structure during a specific period of time and of a particular industry. $X_{i,t,j}$ are the determinants of the target capital structure thus the slop parameters of target capital structure equation represents the short term reaction to the adjustment speed and the constant in target capital structure represents the long run reaction.

From equation 2-D we can draw the following parameter estimates:

(1) $\beta_{1,j}\vartheta_{i,t}$ presents the short-run reaction of capital structure to a unit change in the determinates of target capital structure.

(2) β_0 represents the long run reaction and

(3) If we divide the coefficient $\beta_{1,j}\vartheta_{i,t}$ with one minus the estimate of (1- ϑ) we can also get the estimate of β_0

4.6 DETERMINANTS OF ADJUSTMENT SPEED

The adjustment speed is a function of set of variables affecting the adjustment process. Firm specific and macro-economic variables have been regressed with the adjustment speed estimated from the equation 2-B. The estimated speed of adjustment was estimated industry wise and for every year. The yearly values of the dependent and independent variables used in the following equation. And the parameters are estimated by regressing firms specific and macroeconomic factors with the annual adjustment speed of every sector.

$$\vartheta_{i,t} = \mathrm{Z}(\mathrm{N_{i,t}} + \mathrm{N_{i,t}} + \mathrm{N_{i,t}} + \mathrm{N_{i,t}} + \mathrm{N_{i,t}}) \qquad (3)$$

The functional form of equation with specified variables is as follows by which determinants of adjustment speed are estimated.

$\vartheta_{i,t} = \gamma_0 + \gamma_1 BSPR_{i,t} + \gamma_2 DIST_{i,t} + \gamma_3 GDPG_{i,t} + \gamma_4 MCAP_{i,t} + \gamma_5 INFL_{i,t} + \gamma_6 INTR_{i,t} + \varepsilon_{i,t}$
(3-A)

Where:

$\vartheta_{i,t}$	Capital Structure Adjustment speed of an Industrial sector *i* at time *t*
γ_0	Is constant
$\gamma_1 \text{to} \gamma_5$	Coefficients of independent variables
BSPR	Banking Sector performance measured as reciprocal of non-performing loans.
DIST	Absolute distance between target and actual capital structure at time *t*
GDPG	Gross Domestic Product growth rate
MCAP	Market Capitalization as a ratio of GDP
INFL	Inflation rate
INTR	Interest rate

Annual adjustment speed is estimated by cross section of industrial sector separately. For a single sector there are 12 yearly adjustment speed observations and total five sectors hence, a balanced panel of sixty observations. Macro-economic sector data of last thirteen years along with

the firm specific factor has regressed with the annual adjustment speed to estimate the determinants of the adjustment speed.

4.7 IMPACT OF ADJUSTMENT SPEED ON FINANCIAL PERFORMANCE:

It is theorized that the companies who are able to adjust their capital structure to their target level have better financial performance as compared to the companies having low adjustment speed. Equation 4 captures the impact of adjustment speed on the financial performance of the firm.

$$\rho_{i,t} = \beta_0 + \beta_1 \vartheta_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 GRTH_{i,t} + \beta_4 SPTF_{i,t} \epsilon_{i.t} \quad (4)$$

Where $\rho_{i,t}$ is the financial performance of the industry *i* at time *t* and $\vartheta_{i,t}$ is the adjustment speed of the firms in a particular industry, $SIZE$ is average size of the firms in the industry, GRTH is the average growth of a particular industrial sector and SPTF is the average Spontaneous Finance of that particular industry. A positive relationship of dependent and independent variable was expected. Various measures of financial performance have been used by different scholars including Return on Assets, Return of Capital Employed, Return on Investment, Return on Equity and DuePont formula. All the aforementioned measures have their peculiar implications. This study is a pursuit to investigate the dynamics of capital structure from firm's perspective. Since the residual stakeholders are the owners, firms strive to maximize the return on equity by various ways. Optimal mix of debt and equity is one of the deliberate endeavors to maximize shareholder's wealth. Therefore firm's performance for this study is measured as the Return on Equity.

ROE has been regressed with the adjustment speed of the firms in a particular industry and it would be find out how adjustment speed affects the ROE.

CHAPTER NO. 5

RESULTS AND DISCUSSIONS

This chapter presents the empirical results. The chapter is organized according to the model presented in the previous chapter. The research findings are discussed in light of supported theories and underlying research objectives. This chapter also presents the brief account of the data used in the empirical analysis.

5.1 AGGREGATE DESCRIPTIVE STATISTICS:

The summary statistics indicates that over the period of thirteen years from 1999 to 2011, non-financial corporate sector of Pakistan has witnessed average 10.66% growth rate per annum. Growth is measured as percentage change in sales revenue from previous year to current year by chain base method. However, the aggregate variation of growth rate as indicated by Std.D is relatively high. During this thirteen years period Pakistan has passed through two political regimes and both regimes have discernible difference in economic policies. Therefore, the high rate of variation in growth may simply be attributed to the macroeconomic conditions of Pakistan coupled with the global economic conditions.

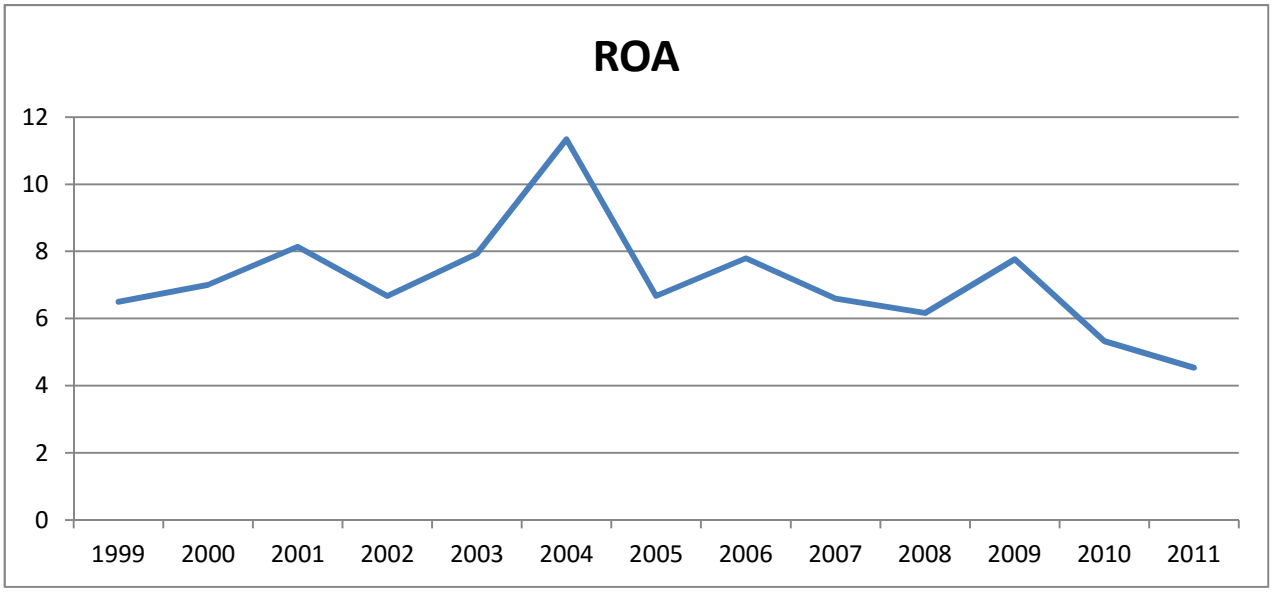
Table 5.1: Summary Statistics

	Mean	Median	Mode	Std. D	Min	Max
SIZE	3.120	3.000	2.700	0.700	0.400	5.200
ROA	0.071	0.090	0.030	0.592	-0.640	0.608
CVA	0.560	0.500	0.900	0.200	0.000	1.000
FSIR	0.108	0.079	0.067	0.309	0.000	0.710
GRTH	0.107	0.079	0.000	0.087	-4.700	3.067
NDTS	0.042	0.037	0.000	0.039	0.000	0.989
SPTF	0.310	0.280	0.220	0.430	0.000	0.845
STS	0.900	1.000	0.100	1.600	0.000	2.710
SDA	0.430	1.000	1.000	4.900	0.000	2.150
LTDA	0.210	0.100	0.000	0.200	0.000	2.700
TDA	0.630	0.700	1.800	0.500	0.000	9.100
CDA	0.190	0.300	0.000	0.300	0.000	2.800
NCDA	0.440	0.300	0.200	0.400	0.000	8.500

Source: Author's own calculations

During this period aggregate profitability of the non-financial corporate sector was 7.11%, again with significantly high variation. The volatility can be attributed to the aforementioned country specific and global factors. The average 8% returns on Assets compared to the rest of the world is reasonably good. However the causes of this volatility may be questioned and investigated, which is another research topic in itself.

Figure 5.1: Average Return on Assets of Corporate Sector over thirteen year period



Source: Author's own calculations

The average annual Return on Assets show 2004 was an extra ordinary year when the aggregate return was more than 11% which is highest figure during this thirteen years period. Year 2004 to onward the decreasing trend is observed. During 2011 the returns were at lowest point i.e. less than 5%. The decrease in the returns may be attributed to the various economic and political challenges that Pakistan faced during this period including energy crises and political and economic uncertainty.

Firm specific interest rate is calculated as percentage financial charges to interest bearing debt which is called contractual debt. Contractual debt includes both negotiated short-term finance and various forms of long term interest bearing debt including debt securities, mortgage loan and financial leases. Overall effective interest rate of the non-financial corporate sector is about 10.84%. Effective interest rates vary across firms and across industries depending on debt covenants and financial structure. This firm specific factor has been included as the determinant of target capital structure due to its theoretical significance for the capital restructuring decisions. Firm specific

interest rate affects the capital restructuring decisions in various ways. Firms with high effective interest rates try to minimize the financial charges by lowering debt or revising the debt covenants or shift from one costly sources of debt to cheaper sources, if allied firm specific factors permit. It is observed that firms with significantly high leverage have more costly debt in their capital structure. The reason of this phenomenon is quite logical, financially distressed companies are desperate for funds to finance their operations and meet other financial obligations. The situation turn more intense when internally generated funds are not enough for such firms to meet their financial needs; therefore, their last resort is borrowing. Due to inherited risk, lenders charge higher interests from such firms to compensate for higher risk. The aforementioned argument supports our findings that firms with higher leverage ratios have higher effective interest rates than their counterparts.

On average total debt in the financial structure of the non-financial corporate sector is 70% in Pakistan. Out of which major proportion is short term debt which stands approximately 50% of the total assets. Out of this 50%, spontaneous financing is 38% and only 12% is negotiated financing. Overall contractual debt is 30% of the total assets and non-contractual debt is 40% of the total assets. These results indicate that Pakistani firms heavily rely on spontaneous financing which is the cheapest source of financing, nearly zero direct financing cost.

It was a difficult trade off to exclude any measure of financial structure for further in depth analysis therefore it was tried that maximum possible depth of analysis is reported. Multiple measures have been analyzed and reported including contractual debt, long term debt and total debt for robustness. The results of multiple measures enable comparison of various forms of debt financing and will provide better understanding of the financial structure dynamics of non-financial corporate sector of Pakistan. The results would be helpful in concluding the debate of representative measure of capital structure.

Table 5.2: Correlation Matrix

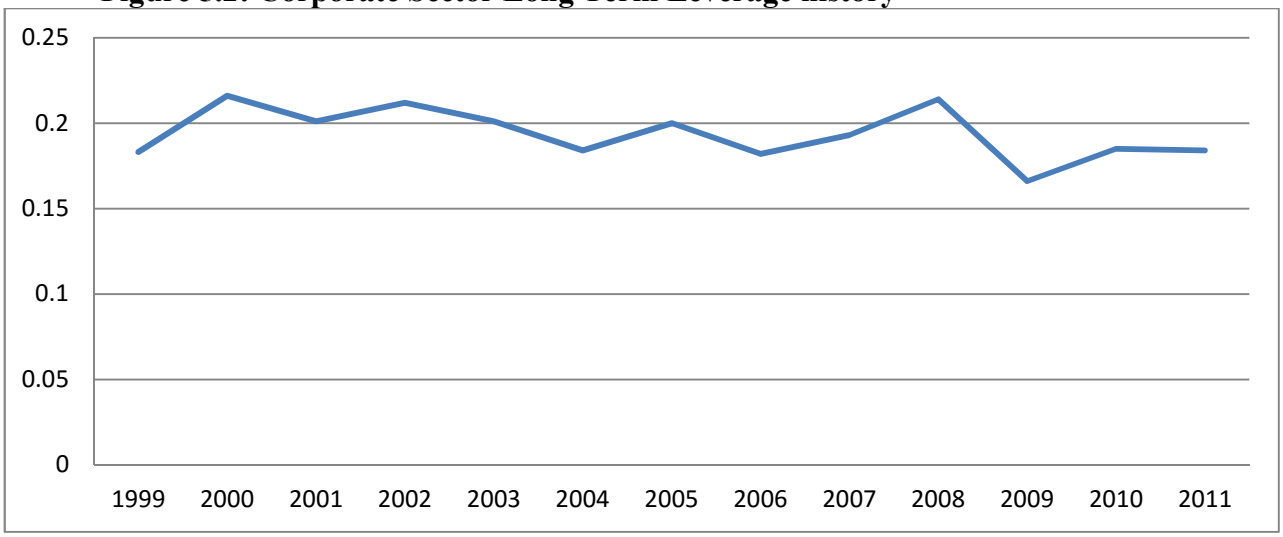
	SIZE	ROA	CVA	FSIR	GRTH	NDTS	SPTF	STS
SIZE	1.000							
ROA	0.068	1.000						
CVA	-0.014	-0.253	1.000					
FSIR	-0.020	-0.044	-0.023	1.000				
GRTH	-0.018	-0.009	-0.014	0.003	1.000			
NDTS	-0.068	0.016	0.210	0.030	-0.008	1.000		
SPTF	-0.163	0.007	-0.115	0.014	-0.024	0.028	1.000	
STS	0.028	0.172	-0.404	-0.017	-0.001	-0.121	-0.263	1.000

Source: Author's own calculations

Drobetz and Wanzenried (2006) indicated the problem of representative measure of capital structure. They applied two definitions of capital structure in other words calculated capital structure by two ratios namely total debt to asset ratio and the second interest bearing debt to capital employed following Rajan and Zingales (1995) who also applied these two definitions of leverage in their study. In this study debt has been thoroughly analyzed all aspect of debt has been discussed including the negotiated finance, interest bearing long term debt which is referred here as contractual debt and total debt including short term contractual debt and long term debt. The correlation among the various measures of the capital structure is not shown in the above table because they are not regressed in any single equation rather they are discussed and analyzed separately.

The correlation metrics indicates there is no strong correlation among the variables except CVA and LDA which is relatively high but cannot be considered high to the objectionable level. The results indicate that variables of the study are orthogonal and no problem of multicollinearity. The results of the model would be robust and would lead to the correct inferences.

Figure 5.2: Corporate Sector Long Term Leverage history



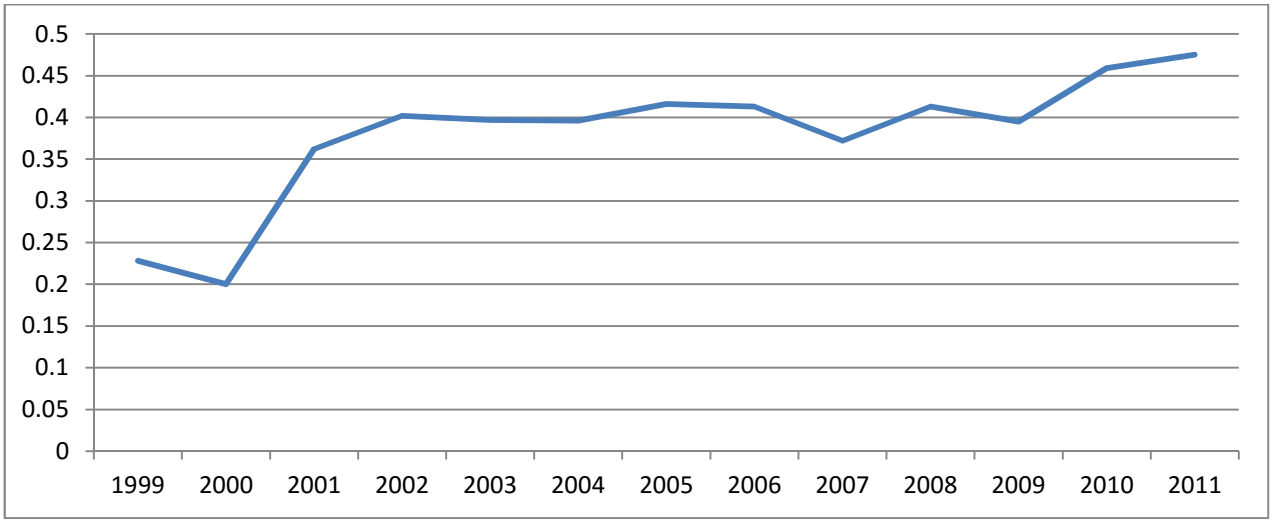
Source: Author's own calculations

Long term debt of corporate sector of Pakistan mostly consists of mortgage loans and various lease arrangement. An Islamic mode of financing has got considerable attention during last two decades but its proportion in overall debt market of Pakistan is negligible. Shariah compliance financial instruments were also introduced in Pakistan but could not perform well even to noticeable level. The proportion of long term debt securities is significantly low. Pakistan's debt market is not incomplete unlike other developed and developing economies of the world. Therefore firms have limited choices for debt financing. Therefore they have to rely on the bank loans, other non-instrumental debt covenants or short term borrowing. The thirteen years data show that long term debt is on average less than 20% of the total assets of the company. Compared to long term debt short term debt has greater proportion in the capital mix of the companies.

Contractual debt includes both long term debt and the short term interest bearing debt which is also called negotiated finance. As the graph below depicts that proportion of the contractual debt has increased over the period of time. In the year 2000 it was about 20% and by end of 2011 it

reached to 50%. The graph shows an overall increasing trend in the proportionate contractual debt to assets ratio.

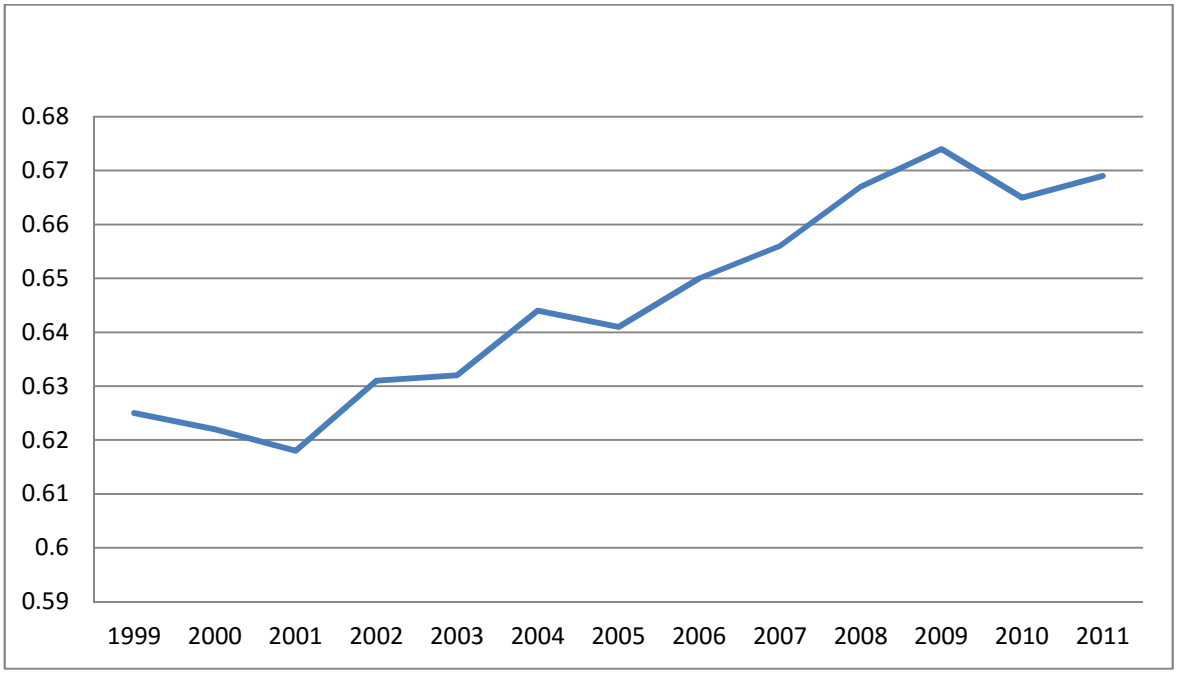
Figure 5.3: Corporate Sector Contractual Debt history



Source: Author's own calculations

Total debt to asset ratio is about 65% aggregate, however it change over time. Total debt includes both short term debt and long term debt. The graph of average annual values of total debt ratio show overall increasing trend. The proportion of debt financing is increasing over time the increase in proportion of debt in the capital mix can be attributed to various factors. The developments in the Islamic financing over last two decades cannot be ignored. Pakistan is an Islamic state with majority Muslim population. As per Islamic teachings interest is prohibited, Shariah Compliance Islamic banking has provided an opportunities to the people who previously avoided debt financing due to religious reasons.

Figure 5.4: Corporate Sector Total Debt history



Source: Author's own calculations

The following table shows descriptive analysis of annual data of three alternate measures of capital structure. The results show that total debt of non-financial corporate sector is on average more than 60% throughout the thirteen years period. Maximum value is 67% in the year 2011. Long term debt on other hand lowest proportion in the capital mix it is around 20% of the total assets of the corporate sector. Contractual debt has medium proportion; it is around 30% of the total assets over the period of thirteen years. From the results it can be easily infer that the Contractual debt has comparatively more variation than the other two measures of capital structure. It indicate that debt covenants are more sensitive to the market conditions and firms adjust their negotiated finance more frequently in response to the changes in capital markets or firm specific dynamics.

Table 5.3: Descriptive Statistics of Three Capital Structure measures

Year	CDA		*LDA*		TDA	
	Mean	*S.D*	*Mean*	*S.D*	*Mean*	*S.D*
1999	0.228	0.174	0.183	0.123	0.670	0.695
2000	0.200	0.160	0.216	0.127	0.622	0.626
2001	0.362	0.386	0.201	0.120	0.618	0.621
2002	0.402	0.418	0.212	0.146	0.631	0.643
2003	0.397	0.405	0.201	0.137	0.632	0.662
2004	0.396	0.396	0.184	0.124	0.644	0.647
2005	0.416	0.420	0.200	0.123	0.641	0.672
2006	0.413	0.427	0.182	0.128	0.650	0.686
2007	0.372	0.378	0.193	0.130	0.656	0.679
2008	0.413	0.430	0.214	0.120	0.667	0.679
2009	0.395	0.417	0.166	0.122	0.674	0.703
2010	0.459	0.490	0.185	0.125	0.665	0.693
2011	0.475	0.511	0.184	0.124	0.669	0.698

Source: Author's own calculations

5.2 PARAMETERS ESTIMATION

Generalized method of moments was originally introduced by Karl Pearson in 1894. The method was later formalized and popularized by Lars Peter Hansen in 1982. GMM has great application for various dynamic models of finance, like CAPM, dynamic models of capital structure. This estimation technique, with small variation, has been used widely in economics and finance. The advantage of GMM over other estimation techniques is that it relaxes various assumptions of OLS regression. Generalized method of moments can estimate the unknown parameters by applying the moment conditions within the sample. Literature suggests that for dynamic models estimation, semi parametric models like GMM is highly recommended. It gives flexibility to avoid unnecessary and irrelevant assumptions of OLS for instance specification of distribution of data and error term. However there are number of issues which need to be addressed while applying GMM.

At the first place parameters were estimated by following equation.

$$TCS^{*}_{i,t} = \lambda_0 + \lambda_1 SIZE_{i,t-1} + \lambda_2 ROA_{i,t-1} + \lambda_3 CVA_{i,t-1} + \lambda_4 FSIR_{i,t-1} + \lambda_5 GRTH_{i,t-1} + \lambda_6 NDTS_{i,t-1} + \lambda_7 SPTF_{i,t-1} + \lambda_8 STS_{i,t-1} + \omega_{i,t} \quad \text{Equation-1-C}$$

Closer the target capital structure to the actual capital structure the parameter $\vartheta_{i,t}$ in equation 2-D representing the adjustment speed closer to one. Therefore the parameters λ_1 through λ_8 referred as short term reaction. Whereas the constant λ_0 represents the long run reaction to adjustment speed.

One period lagged variables were regressed with leverage to estimate parameters of target capital structure. Following Getzmann Lang and Spremann, (2010) estimators were instrumentalist by taking one period lagged independent variables. The parameters estimated by one period lagged variable are used to estimate the target capital structure. As described in (section 1.2) firms are knowledgeable about the firm specific factors prior to making capital restructuring decisions. Therefore the target capital structure is associated with the current period's firm specific factors. Three different measures of leverage namely Long Term Debt to Total Asset Ratio, Contractual Debt (Interest bearing debt) to Total Asset Ratio and Total debt to Total Assets ratio were regressed using the same equation for parameter estimation for robustness. Initially eleven independent variables were identified out of which only eight variables were selected for final analysis. The remaining three variables were dropped because of certain statistical problems.

The equation is estimated by applying GMM. The regression was run in E-views. Maximum 500 iterations were allowed and accuracy was prioritized over speed. Since it is un-balanced pooled data therefore pre-whitening was allowed for unbiased estimation.

5.2.1 Significance of the target Contractual Debt ratio determinants

The given below table shows the impact of explanatory variables on the target contractual debt ratio of the firm which consequently affect the adjustment speed. The equation is estimated by regressing one period lagged independent variables with the contractual debt ratio. Estimated

coefficients of independent variables are then used to estimate target level of capital structure. The GMM estimation technique for unstructured pooled data is applied on overall corporate level data of all companies and all years. The same parameters are used throughout for time and industry variant analysis.

$$CDA^{*}_{i,t} = \lambda_0 + \lambda_1 SIZE_{i,t-1} + \lambda_2 ROE_{i,t-1} + \lambda_3 CVA_{i,t-1} + \lambda_4 FSIR_{i,t-1} + \lambda_5 GRTH_{i,t-1} + \lambda_6 NDTS_{i,t-1} + \lambda_7 SPTF_{i,t-1} + \lambda_8 STS_{i,t-1} + \omega_{i,t}$$ Equation-1-B

Table 5.4: Determinants of Target Contractual Debt to Asset Ratio

Variable	Coefficient	Std. Error	t-Statistic	Prob.
λ_0	0.16386	0.04472	3.66413	0.00024
SIZE	0.03629	0.00967	*3.75268	0.00020
ROA	-0.00198	0.00020	*-9.84407	0.00000
CVA	0.33671	0.03085	*10.9156	0.00000
FSIR	-0.00104	0.00027	*-3.88359	0.00010
GRTH	8.9E-06	1.4E-05	0.64135	0.52140
NDTS	-0.00362	0.00158	**-2.28593	0.02240
SPTF	-0.40847	0.02353	*-17.3617	0.00000
STS	0.20508	0.01643	*12.4807	0.00000
R-squared	0.67121			
Adjusted R-squared	0.67656			
Durbin-Watson stat	1.77451			

significant at 99% confidence level. Significant at 95% confidence level*

The results provide evidence that firms strive to optimize their capital structure by perusing their peculiar target levels. The value of coefficient of determination (R^2=0.67121) indicates that the model has strong explanatory powers. The value of adjusted Coefficient of Determination is *Adj.* R^2=0.67521), which implies that the independent variables are exogenous and explain 67.52% variation in the independent variable. It is observed that all variables except growth opportunities are statistically significant. Size, Collateral Value of Assets and Short Term Solvency has positive and significant relationship with the target contractual debt ratio. The relationship of aforementioned

factors is significant at 99% confidence level. The results are consistent with the existing studies and approve the claim of Trade-Off theory (see e.g., Cook and Tang, 2010). The positive value of *SIZE coefficient* (λ_1=0.036286) along with T-Value (*t-Stat* = 3.752683) indicate a positive and statistically significant relationship. It implies that larger firms have more debt in their capital structure compared to smaller firms because of their power to negotiate and lower default risk. Larger firms also have better prospects in financial markets and therefore capital structure adjustments are comparatively convenient. As per the empirical results the value of CVA coefficient (λ_3 =0.336713) and T-Value (*t-Stat* = 10.91565) stipulate a positive and significant relationship. Collateral value of assets has also positive impact on the target leverage ratio. Firms with proportionately more fixed assets with collateral value can secure more debt. It is conventional wisdom that debt is normally sanctioned against some kind of security. Thus collateral assets serve the purpose and firms may raise finance against this considerable financial security. Therefore the empirical results a positive and significant relationship between target debt ratio and the collateral value of assets. The relationship is significant at 99% confidence level. It can be inferred that the relationship is consistent across firms and over time.

However, Return on Assets, Firm Specific Interest Rate, Non-Debt Tax Shield and Spontaneous Finance have negative relationship with firms target firms target contractual debt level. The empirical results are consistent with theoretical notion and approve the theoretical explanations by various capital structure theories. The negative value of ROA coefficient (λ_2 = -0.001977) and T-value (t-Stat = -9.844070) depicts statistically significant and strong negative relationship. Higher t-value lay down that the relationship is strongly consistent across firms and over time and it is significant at 99% confidence level. The results are parallel to the pecking order theory which claims that firms preferred internally generated funds over the debt financing. The results specify that firms

with higher profits will have lower tendency towards debt financing and therefore will have lower debt ratios. Profitable firms have lower targets debt ratios *vice versa*. Firm Specific Interest Rate denoted by *FSIR* has negative coefficient (λ_4 = -0.001043) and calculated T-Value (*t-State* = -3.883589) greater than corresponding critical value. The results indicate statistically significant negative relationship. Increase in firms' peculiar cost of debt reduces the appetite for debt financing. Firms with higher actual interest cost have less incentive for increasing debt rather they try to adjust downward by paying off debt or reducing their cost of debt by means of swap arrangements. The higher gap between the prevailing market interest rate and the firm's specific interest rate instigate the restructuring.

The biggest advantage of using debt into the capital mix of the firms is the deductibility of interest (cost of debt) for tax calculations. This feature makes debt financing less costly than the equity. Non-debt tax shield is ratio of non-cash tax deductible expenditures including depreciation, amortization, depletion and set off and carry forward of losses. The negative coefficient value (λ_6 =-0.003618) and T-value (t-Stat = -2.285932) indicate an inverse and statistically significant relationship. The relationship is significant at 95% confidence level as the calculated t-Stat is greater than the corresponding tabulated value at 95% confidence level however the calculated T-Value is less than the corresponding tabulated value at 99% confidence level. Still the results are significant and contribute towards the explanatory powers of the model. If the firm has enough pool of expenditures in a particular year which can reduces the tax burden of the firm the debt financing has less incremental benefits. The negative relationship is in accordance with the generally accepted notion. Spontaneous financing is the cheapest source of financing. If a firm is able to get sufficient non-interest bearing funds to finance their operations interest bearing debt covenants is least desired. Therefore a negative relationship is found which supplement the supposition. Negative coefficient

value ((λ_6= -0.408467) and considerably higher T- Statistics i.e. (-17.36174) indicates statistically significant negative relationship.

The relationship of growth opportunities and the target contractual debt ratio is positive but insignificant. The calculated T-Value (0.641351) does not fall in the acceptable region at any significant confidence level. This is analogous to the existing literature however the relationship is not consistent therefore it's not statistically significant. The possible reason of this dichotomy is the measurement problem. Different measures have been taken by different scholars. For this research, chain base method of calculation of annual growth is applied. The variation due to chain base might have distorted the results. Referred to the Table 5.1 showing descriptive statistics the standard deviation of growth rate across firm and over time is considerably high i.e. 81 percent. This value is considerably abnormal, economic instability and international factors may be attributed to this high variation. Some scholars have used annual percentage growth of total assets which appears more stable than the former method but the heteroscedasticity problem arise.

5.2.2 Coefficients of Target Long Term Debt ratio

The second equation is estimated by applying GMM for unstructured panel data technique. The dependent variable is Long term debt to total asset target ratio. The independent variables were instrumentalized by taking one period lag value. The results show that the model explains ~62% variation in the dependent variable. From the small difference in unadjusted coefficient of determination (R^2) and the adjusted coefficient of determination (Adjusted R^2), it is inferred that all explanatory variables are orthogonal. Thus the model has strong explanatory powers.

$$LDA^*_{i,t} = \lambda_0 + \lambda_1 SIZE_{i,t-1} + \lambda_2 ROA_{i,t-1} + \lambda_3 CVA_{i,t-1} + \lambda_4 FSIR_{i,t-1} + \lambda_5 GRTH_{i,t-1} + \lambda_6 NDTS_{i,t-1} + \lambda_7 SPTF_{i,t-1} + \lambda_8 STS_{i,t-1} + \omega_{i,t}$$ Equation-1B

Table 5.5: Determinants of Target Long Term Debt to Asset ratio

Variable	Coefficient	Std. Error	t-Statistic	Prob.
λ_0	0.219841	0.08983	2.44730	0.0132
SIZE	0.016378	0.00301	*5.44918	0.0000
ROA	-0.000300	0.00011	*-2.77360	0.0056
CVA	0.345896	0.01607	*21.51905	0.0000
FSIR	-0.001664	0.00039	*-4.21495	0.0000
GRTH	1.67E-05	6.46E-06	*2.58073	0.0099
NDTS	-0.004137	0.00148	*-2.79283	0.0053
SPTF	-0.153540	0.01181	*-13.00075	0.0000
STS	0.017580	0.00311	*5.65190	0.0000

R-squared	0.626350
Adjusted R-squared	0.614130
Durbin-Watson stat	1.839134

significant at 99% confidence level. Significant at 95% confidence level*

All the results are similar to the results of Equation 1B. Empirical results reveal that size of the firm has positive and statistically significant relationship with the long term debt targets. Size is significant at 99% confidence level as the calculated value (5.449182) is greater than the correspondent critical value, thus fall in the acceptable region. Collateral value of assets and Spontaneous finance both have positive and highly significant relationship. Both aforementioned variables affect the target long term debt to assets in positive way. With increase in size of the firm, collateral value of assets and short term solvency increases the long term target debt ratio thus their coefficients determines what target level of capital structure is? Interestingly the growth has positive and statistically significant relationship with long term debt target ratio. The difference in results of contractual debt and long term debt ratio indicates that only long term debt is affected by the growth of the company. The small value of coefficient implies that growth opportunities have little impact over target long term debt ratio. The relationship is significant at 99% confidence level. The variable has small predictive power compared to other independent variables.

Profitability measured by Return on Assets ratio has negative and significant relationship with long term leverage target ratio. The relationship is significant at 99% confidence level. The relationship implies that profitable firms meet their financing needs from the internally generated fund and prefers internally generated funds over external sources. This tendency attests the pecking order theory. Collateral value of assets measured as the ratio of tangible fixed asset to total asset has positive relationship with long term leverage. The relationship is significant at 99% confidence level. The calculated t-value (21.51905) is greater than critical value at this degree of freedom. Firm specific interest rate has negative impact on target adjustments of long term debt. Higher the firm specific interest rate lowers the adjustments towards target. The relationship is significant at 99% confidence level as indicated by t-State value of 4.214955. Like contractual debt, Firm specific interest rate, non-debt tax shield and spontaneous finance has negative and significant relationship with long term debt target ratios.

5.2.3 Coefficients of target Total Debt ratio

The third equation is estimated for target total debt ratio. The coefficients are estimated by following equation. The results are consistent with second equation. It implies that both of the capital structure measures have same parameters with immaterial variations in the value of coefficients. Yet again growth has negative and statistically insignificant relationship with the target total debt ratio. Other than the Growth opportunities all other variables have statistically significant relationship with the target total debt to asset ratio.

$$TDA^{*}_{i,t} = \lambda_0 + \lambda_1 SIZE_{i,t-1} + \lambda_2 ROE_{i,t-1} + \lambda_3 CVA_{i,t-1} + \lambda_4 FSIR_{i,t-1} + \lambda_5 GRTH_{i,t-1} + \lambda_6 NDTS_{i,t-1} + \lambda_7 SPTF_{i,t-1} + \lambda_8 STS_{i,t-1} + \omega_{i,t} \quad \text{Equation-1C}$$

Table 5.6: Determinants of Target Total Debt to Asset ratio

Variable	Coefficient	Std. Error	t-Statistic	Prob.
λ_0	0.245761	0.047491	*5.174896	0.0000
SIZE	0.036526	0.009661	*3.780696	0.0002
ROA	-0.001977	0.000202	*-9.775987	0.0000
CVA	0.337058	0.030819	*10.93658	0.0000
FSIR	-0.001050	0.000268	*-3.920079	0.0001
GRTH	8.77E-06	1.39E-05	0.628656	0.5296
NDTS	-0.003696	0.001590	**-2.324578	0.0202
SPTF	0.591325	0.023516	*25.14580	0.0000
STS	0.204587	0.016442	*12.44262	0.0000

R-squared	0.539225
Adjusted R-squared	0.526393
Durbin-Watson stat	1.774325

significant at 99% confidence level. Significant at 95% confidence level*

Firm Specific interest rate has significant negative relationship with all three measures of capital structure. This result can be justified from two different perspectives. Firms having less favorable debt covenants bear higher effective interest rate thus discourage more debt financing. Other perspective is the fact that firms bearing less effective interest rate employee higher debt in the capital structure for optimal use of capital.

Growth has positive impact on the long term target leverage however the magnitude of relationship is very small. The relationship between growth and the long term debt to total assets is statistically significant at 1% confidence level. It implies firms having growth opportunities employ more debt in their capital mix to finance the growth opportunities. Growing firms exploit the degree of financial leverage for profit maximization. Revenue growth in presence of fixed financial charges results higher return on equity. The incremental positive returns on equity compensate the additional

risk associated with fix nature of interest payments. The relationship between growth opportunities and the contractual debt is positive but statistically insignificant. Calculated t-value 0.64135 is greater than the critical value.

Non debt tax shield has negative relationship with leverage. The relationship is significant at 1% confidence level. The inverse relationship between long term leverage and non-debt tax shield implies that firms having more tax deductible non-cash expenditures and/or accumulated losses employ less debt. The biggest advantage of the employing debt in the capital structure is the tax deductibility of the interest expenses. If the firms have non-cash expenditures in terms of depreciation, amortization and depletion may avoid taxes on income tax. Such firms have less incentive to use leverage as tool for tax savings. Therefore the relationship between non-debt tax shield and leverage is negative. Calculated t-value -2.792829 is greater than the critical t-value therefore fall in the acceptable region.

Spontaneous financing, as an alternate source of financing, play important role in capital structure decisions. Spontaneous financing is the cheapest sources of financing therefore preferred by the firms if firm don't have working capital issues. The empirical results show that spontaneous financing has significant negative relationship with the long term debt. The relationship is significant at 1% confidence level. The results attest the theoretical justification of the inverse relationship between the spontaneous finance and long term debt.

Solvent firms have greater prospects of getting debt at cheaper rates because the default risk in such firms is lower. The positive relationship between short term solvency and the capital structure is attested by the empirical results. The positive relationship between short term solvency and the capital structure is statistically significant at 1% confidence level.

5.3 CAPITAL STRUCTURE ADJUSTMENT SPEED

In estimation of adjustment speed two steps are involve. First step is to estimate the determinants of target capital structure. Then these estimated coefficients are used to estimate target capital structure. Second step is to estimate the speed of adjustment. Speed of adjustment is estimated using dynamic regression model. The determinants of target capital structure discussed above were used to estimate target level of capital structure of firm *i* in year *t*. Target capital structure of each firm is computed by applying coefficients estimated through overall data. The yearly difference between the capital structures is regressed with the difference of the estimated capital structure and the actual capital structure at time *t* of firm *i*. The coefficient ϑ is called adjustment speed in this model.

$$CS_{i,t+1} - CS_{i,t} = \vartheta_{i,t}(TCS^{*}_{i,t} - CS_{i,t}) \quad \text{Equation-2}$$

Table 5.7 shows the corporate sector's overall Annual Adjustment Speed. The difference between target and actual capital structure ($TCS^{*}_{i,t} - CS_{i,t}$) of Firm *i* is regressed with the difference in capital structure from previous year($CS_{i,t+1} - CS_{i,t}$). The coefficient $\vartheta_{i,t}$ is referred to as the adjustment speed. The adjustment speed is affected by the estimated parameters of target capital structure. The reaction of adjustment speed towards the estimated parameters can be split into long run and short run reaction as indicated by the equation 2-D.

$$CS_{i,t+1} = \beta_0\vartheta_{i,t} + \left(1 - \vartheta_{i,t}\right)CS_{i,t} + \beta_{1,j}\vartheta_{i,t}X_{i,t,j} + \mu_{i,t} \qquad (2\text{-D})$$

Where;$\vartheta_{i,t}$is adjustment speed measured as parameter for the direction and magnitude of adjustment in capital structure during a specific period of time and of a particular particular. $X_{i,t,j}$ are the determinants of the adjustment speed which represents the short term reaction to adjustment speed.

If the equation 2-D is estimated in two steps the parameters of equation 1-C can be interpreted as the short run and long run reactions similar to equation 2-D.

By putting the estimated parameters in the equation we get the following results:

(1)Contractual debt

$$CS_{i,t+1} = 0.1638\vartheta_{i,t} + (1-\vartheta_{i,t})CS_{i,t} + 0.03629\,\vartheta_{i,t}SIZE - 0.00198\,\vartheta_{i,t}ROA + 0.33671\vartheta_{i,t}CVA - 0.00104\vartheta_{i,t}FSIR - 0.00362\vartheta_{i,t}NDTS - 0.40847\vartheta_{i,t}SPTF + 0.20508\vartheta_{i,t}STS + \mu_{i,t}$$

(2)Long term debt

$$CS_{i,t+1} = 0.219841\vartheta_{i,t} + (1-\vartheta_{i,t})CS_{i,t} + 0.016378\,\vartheta_{i,t}SIZE - 0.000300\,\vartheta_{i,t}ROA + 0.345896\vartheta_{i,t}CVA - 0.001664\vartheta_{i,t}FSIR + 0.000017\vartheta_{i,t}GRTH - 0.004137\vartheta_{i,t}NDTS - 0.133540\vartheta_{i,t}SPTF + 0.017580\vartheta_{i,t}STS + \mu_{i,t}$$

(3) Total debt

$$CS_{i,t+1} = 0.245761\vartheta_{i,t} + (1-\vartheta_{i,t})CS_{i,t} + 0.036526\,\vartheta_{i,t}SIZE - 0.001977\,\vartheta_{i,t}ROA + 0.337058\vartheta_{i,t}CVA - 0.001050\vartheta_{i,t}FSIR + 0.00009\vartheta_{i,t}GRTH - 0.003696\vartheta_{i,t}NDTS + 0.591325\vartheta_{i,t}SPTF + 0.204587\vartheta_{i,t}STS + \mu_{i,t}$$

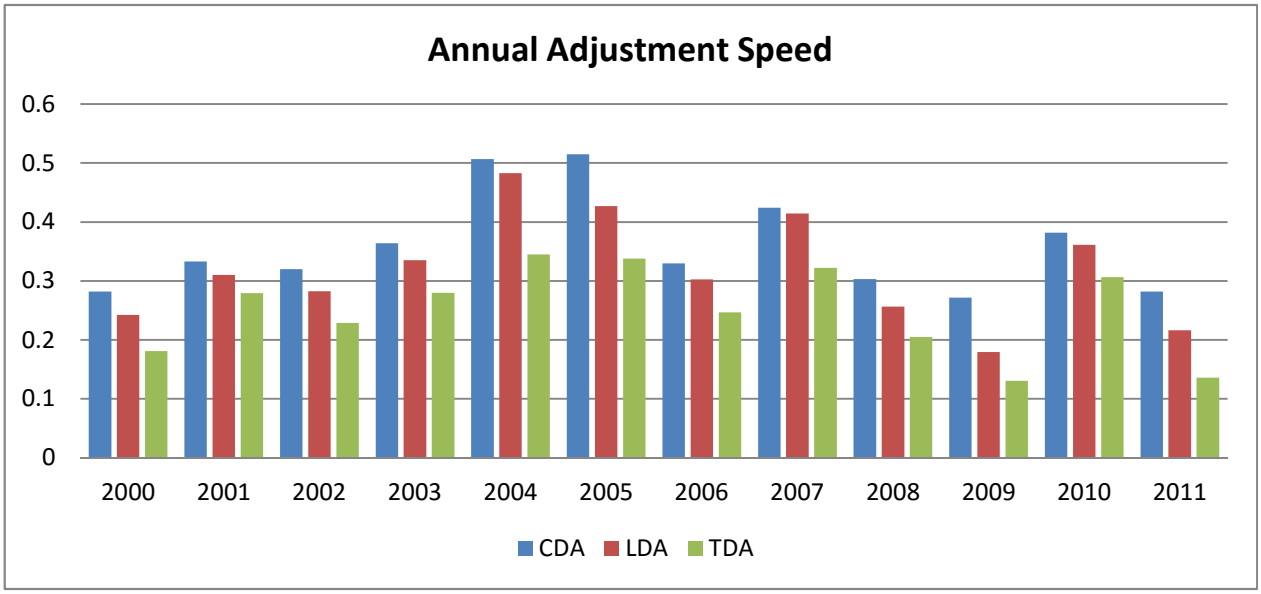
The constant in the equation 1-C, which is symbolized as β_0 in equation 2-D. The analysis show that value of Long run reaction as symbolized in the model β_0=0.16386 which is significant at 99% confidence level in case of contractual debt, the value of β_0 which represent the long run reaction is 0.219841 in case of long term debt to asset ratio and the parameter is significant at 95% confidence level; the value of β_0 is 0.245761 in case of total debt to asset ratio. The short run reaction of adjustment speed is already explained as the determinants of target capital structure in the relevant sections.

The results indicate that over the period of thirteen years non-financial corporate sector of Pakistan adjusts an average ~41% contractual debt, ~42% long term debt and ~25% total debt towards their target ratios. Flannery and Rangan (2006) reported 35.5% annual adjustment towards the target leverage in case of interest bearing debt ratio in other words contractual debt ratio. In case of Pakistan the adjustment speed is 41% which is higher than the estimates of Flannery and Rangan (2006). The higher speed can be attributed to the highly volatile economic condition of Pakistan. Highest adjustment is observed in long term and the lowest adjustment in total debt. It is observed that adjustment in contractual debt is moderate compared to total debt and long term debt. The lower rate of adjustment in long term debt is in accordance with the notion that long term debt covenants have higher adjustment cost. Normally long term debt is sought for long term investment projects and the investment is comparatively difficult to alter in short run. However medium and short range debt financing is comparatively less fix in nature thus restructuring is comparatively efficient.

5.3.1 Annual Adjustment Speed

The results indicate that over the period of thirteen years the annual adjustment towards the target capital structure portrays a head and shoulder pattern. Starting from 1999 to 2003, the adjustment speed was increasing over time. During 2004 and 2005 the adjustment towards target capital structure was at highest point of period under study. From 2005 to onward the adjustment speed is decreasing over time and thus shows a downward trend. During the year 2004 the corporate sector financially outperformed. If the results are interpreted in light of the financial performance it can be clearly observed that during financially prosperous periods capital adjustment was higher compared to the other periods.

Figure 5.5: Capital Structure Adjustment speed of Overall



It is reported on the basis of results that highest adjustment in Contractual Debt was in year 2005 i.e. ~51% and the lowest adjustment in year 2009 i.e. ~27%. Same applies to Long term debt where highest adjustment in year 2004. ~48% and lowest in year 2009. ~18%. It is observed that lowest total debt is less likely to be adjusted compared to other two measures of capital structure. However the adjustment patterns are similar to the former two measures of capital structure. 2004 was the year when Pakistan's corporate sector has made maximum adjustments in total debt i.e. ~35% and lowest adjustments are found in the year 2009 and 2011.

Table 5.7: Annual Capital Structure Adjustment Speed of Overall

Year	CDA		LDA		TDA	
	Θ	*t-Stat*	*Θ*	*t-Stat*	*Θ*	*t-Stat*
2000	0.281984	4.29764	0.242619	4.6939	0.180885	5.03075
2001	0.333036	6.38862	0.309989	6.59281	0.279301	5.34719
2002	0.319871	4.80915	0.282362	5.75388	0.228602	5.12841
2003	0.363810	3.37036	0.335193	4.65792	0.279709	5.06734
2004	0.506489	4.11557	0.483028	4.84052	0.345165	4.51625
2005	0.514715	4.96789	0.426692	5.12738	0.337719	5.71377
2006	0.329665	3.29592	0.302752	4.76981	0.246587	3.55276
2007	0.424273	4.57739	0.414244	5.85228	0.322047	5.10326
2008	0.303288	4.40886	0.256359	6.01732	0.204686	3.31571
2009	0.271812	4.34176	0.179597	3.98463	0.130459	3.21793
2010	0.381956	4.39394	0.361182	3.27818	0.306595	4.66853
2011	0.281955	3.66453	0.21647	4.19928	0.13622	4.34794
Average	0.359404		0.317541		0.249831	

Source: Author's own calculations

The results show highest adjustment speed in Contractual debt ratio the values disperse between ~27% to ~51% per annum. Moderate adjustment speed is found in Long term debt ratio which ranges from ~18% to ~48% per annum. The adjustment speed of total debt ratio is found to be lowest ranging from ~13% to ~35%. The annual adjustment speeds are computed from the cross sectional data of all companies in all sectors for a particular year. For every year a separate equation is run and adjustment speed is estimated apply GMM-sys technique. Higher T-values corresponding to every value of adjustment speed indicates statistical significance. To T-values are also presented to show the significance of the speed of adjustment.

5.3.2 Industry Adjustment Speed

Initially the data of firms from nine different industrial sectors were used for estimation of parameters of determinants of adjustment speed and annual overall corporate adjustment speed. Estimation of annual adjustment speed for each industry requires cross sectional data of that particular industry in a particular period. One firm is one observation for estimation of adjustment speed at industry level. Thus the industrial sector with less number of firms were merged and referred to as Miscellaneous for this research purpose. The large industrial sectors with sufficient number of firms have been analyzed and reported separately. The following table shows the descriptive statistics of sector wise capital structure adjustment speed.

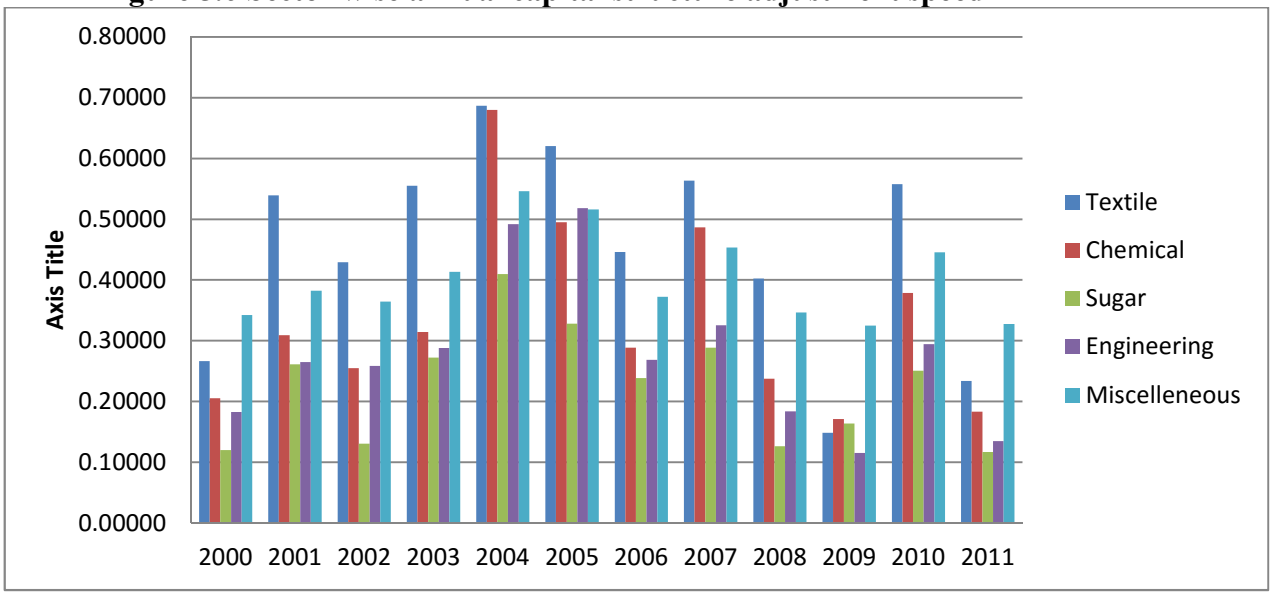
Table 5.8: Capital Structure Adjustment Speed summary statistics of individual economic sectors

	Textile	*Chemical*	*Sugar*	*Engineering*	*Miscellaneous*
Mean	0.454	0.334	0.226	0.277	0.403
Median	0.493	0.299	0.245	0.267	0.377
Standard Deviation	0.166	0.152	0.094	0.125	0.073
Coef. Of Var	0.365	0.456	0.419	0.450	0.182
Range	0.538	0.508	0.293	0.403	0.221
Minimum	0.149	0.171	0.117	0.115	0.325
Maximum	0.687	0.680	0.410	0.518	0.546

The largest sector in Pakistan's corporate sector is Textile. The data of 155 companies was available till 2011, out of which 5 companies were dropped due to missing data for some years. The descriptive statistics of annual adjustment speed show that the values disperse between 68.7% to 15% per annum. On average textile sector of Pakistan adjusts ~45% towards target capital structure annually. It implies that Textile sector takes approximately two years to fully adjust to its target level

if other things remain same. In the real world thing do not remains same thus the target is dynamic and not static over time period. Thus higher the adjustment speed in a particular year is closed the target ratio. Chemical sector at number two is second in the row with ~33% average adjustment speed. The variation in adjustment speed is lower than the textile sector. The values disperse between 17% to 68%. Average 33% adjustment speed implies that chemical sector take approximately three years to fully adjust to their target capital structure if other things remains same. Engineering sector is third in the row and adjust capital structure ~28%. The dispersion in annual adjustment speed is comparatively low values disperse between 11.5% to 58%. The lowest adjustment speed is found in sugar sector with ~22% per annum. The dispersion is also lower than other bigger industrial sectors. All other small sectors are grouped as miscellaneous. A moderate adjustment speed with minimum dispersion is found in all other companies.

Figure 5.6 Sector wise annual capital structure adjustment speed



Source: Author's own calculation

The above graph show that highest adjustment speeds in all industrial sectors was during 2004 and lowest during 2009. The results are more or less similar to the overall adjustment speed.

The graph clearly show that the maximum speed of adjustment is in textile sector consistently over the period of 12 year. And the lowest adjustment speed in the sugar sector over the period from 2000 to 2011. Other sectors show a moderate adjustment speed during this period.

5.4 DETERMINANTS OF ADJUSTMENT SPEED

On average highest capital structure adjustment speed is observed in Contractual Debt target Ratio. It entails that firms adjust their long term debt covenants to cope up the dynamics of financial environment to minimize their financial cost. The cost of long term debt is relatively higher than short term debt due to longer maturities. Therefore the effective interest rate of long term debt is more sensitive to financial environment changes than the short term debt. Firms strive to bring their effective interest rate at par with the prevailing market interest rate. To achieve this optimal mix of capital, they strive to adjust their long term debt by issuing or redeeming debt securities or through other swap arrangements.

Since all measures of capital structure have provided robust results in comparative analysis, further analysis are performed only on long term debt ratio as measure of capital structure. We specified in chapter two that adjustment speed is a function of various macro-economic and firm specific factors. Table no. 5.9 shows that banking sector performance, the Distance between target and actual capital structure Gross Domestic Product growth rate and Inflation are the significant factor of the adjustment speed of the companies.

The annual adjustment speed was estimated for five industrial groups from year 2000 to 2011, which yielded a balance panel of 60 observations. Both industry fix effect and time fix effect were used to control the data discrepancy, as the dependent variable adjustment speed was the industry and time variant. Macroeconomic data is time variant therefore is same for all industries.

Therefore time and industry fix effect was taken for robustness of results. There was no significant difference therefore only industry fix effect results are reported and discussed. The results of time fix effect have been reported in the appendix. The determinants of adjustment speed are estimated by applying industry fix effect model of OLS and GMM. The results are not significantly different with both estimation techniques.

Unadjusted coefficient of determination *(R^2*= 0.655897) and adjusted coefficient of determination (*Adjusted R^2*= 0.626488) indicates that explanatory variables are endogenous to the model. The variation in dependent variable is ~63% explained by the independent variable. The closer value of adjusted and unadjusted coefficient of determination also indicate that all the variables are endogenous to model and the explanatory powers of model are not distorted by any of the explanatory variable due to exogeneity.

Table 5.9: Determinants of Adjustment Speed

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BSPR	0.003613	0.001724	**2.095628	0.0407
DIST	0.514435	0.109448	*4.700277	0.0000
GDPG	0.038574	0.006473	*5.959256	0.0000
MCAP	0.001880	0.001956	0.960806	0.3409
INFL	-0.003580	0.002317	-1.544791	0.1281
INTR	-0.183584	0.031426	**-2.619682	0.0193

R-squared	0.655897
Adjusted R-squared	0.626488
Durbin-Watson stat	1.522793

significant at 99% confidence level. Significant at 95% confidence level*

Table No.5.9 demonstrates the results of determinant of adjustment speed toward target capital structure. It is found that banking sector performance has significant positive relationship

with the capital structure adjustment speed. The positive value of coefficient (γ_1=0.003613) and T-Value (t-State=2.095628) specify positive relationship at 95% confidence level. A well-functioning banking sector plays an important role in the capital structure adjustments. In developing countries like Pakistan where debt capital markets are not developed and firms have less opportunities to raise debt finance through capital markets rely on banks for their financing needs. Banking sector performance affects the corporate sectors ability to adjust towards their capitals structure positively. If the banking sector perform well the firms have better prospects to adjust their capital structure towards the target capital structure. Robust results are also found for Distance as a measure of gap between targets and actual capital structure. The estimated coefficient value (γ_2 =0.514435) and calculated T-Value (t-value= 4.700277) lay down statistically significant relationship at 99% confidence level. It is reported on the basis of results that firms optimize their capital structure by adjusting their capitals to the target levels. The results are consistence with the trade-off theory. GDP growth also has positive and significant impact on the adjustment speed of the firms. Positive value of coefficient ($\gamma_3 = 0.038574$) and T-value 5.959256 specify a significant positive impact of GDP growth on the adjustment speed of the firms. GDP growth is characterized by economic growth and expansion. During economically good periods firms expand their operations and projects. To finance their expansions firms seek financing and new financing may deviate the actual capital structure from the target capital structure. During economically prosperous periods firms do have better avenues to restructure their capital as the availability of capital is also affected positively by the economic growth. This result is in accordance with the supposition that firms adjust their capital structure speedily in good economic conditions. No any significant relationship is found between GCFR and adjustment speed. Market Capitalization has positive but insignificant impact on the adjustment speed of the capital structure. Positive value of coefficient (γ_4 =0.001880) specifies

positive relationship however the t-value=0.960806 indicates statistical insignificance of the relationship. The results show that variation in equity market capitalization does not affect the adjustment speed. Thus it is reported that capital structure adjustments are not affected by the market capitalization. Firms raise equity capital from the by issuing new shares good market conditions only make difference at the time of new issue. Existing capital stock is not affected by the market conditions therefore market capitalization has no effect on the capital structure unless the firms issue new equity. The results are may differ from the developed countries where firms consider equity markets as an avenue for capital restructuring. Inflation rate was hypothesized a determinant of adjustment speed. It was expected that inflation rate would have negative impact on the adjustment speed of capital structure. The negative value of coefficient and the lower value of *t-state i.e. -1.544791* indicate that inflation has negative impact; however, the relationship is not highly significant. It is significant at 85% confidence level which is not authoritative enough to establish any conclusive statement. Interest rate is a robust determinant of adjustment speed. Prevailing interest rate has negative impact on the adjustment speed as indicated by negative coefficient value (γ_6=-0.183584). The relationship is significant at ~99% confidence level. The inverse relationship is in accordance with the common notion that higher interest rates reduce the speed of adjustment.

5.5 IMPACT OF ADJUSTMENT SPEED ON FINANCIAL PERFORMANCE

Firms make adjustments in capital structure for optimal utilization of capital or more specifically equity capital. Debt is used to lever the returns on equity by exploiting the fix cost of debt. This last section is to investigate the effectiveness of adjustment speed. The adjustment speed is regressed with the commonly used financial performance indicator i.e. return on equity. Financial decisions are made to achieve a common goal of maximize the shareholders wealth. No doubt the

aforementioned objective of financial management is debatable for this research purpose it is taken at face value.

A separate regression has been run to estimate the impact of adjustment speed on the financial performance of the industry, keeping size of the firm, growth opportunities and spontaneous finance as control variables. The estimated annual adjustment speed of five industrial sectors for twelve years results a balanced panel of sixty industry-year observations. The adjustment speed is regressed in the following equation with the industry average annual return on equity to find out impact of adjustment speed on the financial performance.

$$\rho_{i,t} = \beta_0 + \beta_1 \vartheta_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 GRTH_{i,t} + \beta_4 SPTF_{i,t} \epsilon_{i.t}$$

Table 5.10 Impact of Adjustment Speed on Financial Performance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
β_0	0.04789	0.00761	6.28942	0.0000
ϑ	0.35003	0.11182	3.13037	0.0018
$SIZE$	0.36404	0.30759	-1.18354	0.2112
$GRTH$	0.00726	0.00307	2.36621	0.0180
$SPTF$	2.76190	0.47634	5.79814	0.0000

R-squared	0.58327	Durbin-Watson stat	1.26783
Adjusted R-squared	0.60429		
S.E. of regression	0.04982		
F-statistic	15.4191	Prob(F-statistic)	0.00000

Positive value of coefficient (ϑ =0.35003) and corresponding T-value (t-Stat= 3.13037) indicate that capital structure adjustment speed has positive relationship with the financial performance of the firm at 99% confidence level. We also found a positive and statistically significant relationship between growth and ROE. There is also a positive relationship between spontaneous finance and ROE. However, size of the firm and the financial performance do not have

statistically significant relation. Firm fix effect model by applying panel least square methods and keeping industry fix effect are presented in above table. Where R^2 value 0.58327 implies that 58.32% variation in ROE is explained by the independent variables in the equation. The minimum value of R^2 is found by applying GLS two way random effect model i.e. ~10%. On the basis of results it is inferred that capital structure adjustment speed enhances the financial effectiveness of the firms.

Overall the results are consistent with prior research. Even with alternate methodologies and alternate measures of variables the results are consistent with negligible variation. Dynamic tradeoff theory best explains the financial policy of the corporate sector of Pakistan. The empirical results indicate strong evidences in favor of dynamic trade off model.

CHAPTER NO.6

CONCLUSION AND RECOMMENDATIONS:

Financial policy of Pakistan's non-financial corporate sector is empirically investigated from diverse perspectives, ranging from determinants of target capital structure to the effectiveness of the financial policy. The investigation includes all non-financial sector companies listed on the KSE from 1999 to 2011. The results provide strong evidence to report size, profitability, collateral value of assets, firm specific interest rate, non-debt tax shield, spontaneous financing and liquidity robust determinants of the target capital structure. Out of eight variables four variables are found inversely related to the target capital structure namely ROA, Firm specific interest rate, non-debt tax shield and spontaneous financing. On other hand firm size, collateral value of assets and liquidity has positive impact on capital structure targets. The results are consistent with existing literature and also with various capital structure theories.

It is reported on the basis of results that firm specific factors play an important role in shaping financial policy of the Pakistani non-financial firms. Out of three alternate measures of capital structure, contractual debt to assets target ratio is explained maximum by the explanatory variables and least explained when total debt target ratio is regressed with the same repressors. The results are consistent with an international study conducted by Getzmann and Spremann (2010). They applied similar methodology and reported that determinants of target capital structure and adjustment speed differ across countries. The results of this research are similar to their findings for Asian countries.

Annual speed of capital structure adjustment is estimated for overall corporate sector as well as for various industries separately. It is found that adjustment speed of long term debt is highest and of total debt is lowest. On average firms adjust 33% per annum to their capital structure toward target

level, it take around three years to fully adjust toward dynamic targets. The speed of adjustment vary over time and across industries highest adjustment speed is found in Textile industry and lowest in Sugar industry. The adjustment speed is dispersed between 14% to 58%, over time and across industries.

Robust results are found for the determinants of adjustment speed. It is reported on the basis of results that banking sector performance, GDP growth, distance from the target, inflation and market interest rates are robust determinants of adjustment speed. Banking sector performance, GDP growth and distance from the target are related positively to the adjustment speed. Inflation and market interest rate are inversely related with adjustment speed. No significant relationship is found between adjustment speed and gross capital formation. It is inferred that volatile inflation and high market interest rates impedes the adjustment speed of non-financial firms. The results are consistent with the theory and the results of empirical studies (e.g., Elsas, and Florysiak, 2013; Flannery and Hankins, 2013; Antão and Bonfim, 2014).

It is found that capital structure adjustment play an effective role in levering returns to the equity holders who have residual claim on the profits of the firm. Restructuring capital to achieve the optimality is one of the essential strategies to magnify the returns to the ultimate owners of the firm i.e. shareholders. It is concluded that good economic conditions and sound financial system increase the firms' capability to achieve their financial structure targets. Firms closer to their dynamic target capitals outperform compared to the firms far from their capital structure targets. A sound and well performing corporate sector accelerates the economic development and growth of any country.

6.1 RECOMMENDATIONS

It is recommended on the basis of research findings that firms should keep revising the capital structure targets in response to changes in firms' peculiar financial situation and changes in financial environment. Firms which are more responsive to the deviations of capital structure from the target level, outperform than the firms which are slow in reconciling the gap between target and actual capital structure. The dynamic target capital structure should be achieved by all available means to maximize the value of the firm.

The regulatory authorities should formulate policies to develop a well-functioning market of corporate debt securities. Parallel to equity markets a complete and efficient debt security market is essential for optimal utilization of the capital. Efficient utilization of capital by corporate sector will ensure the proper placement of country's scarce resources. Thus state should pay close attention to balance the growth of financial markets to provide full range of financing to the corporate sector and more investment avenues to the investors. Corporate financial performance and well-functioning capital markets play an important role in the economic development of a country therefore state should give due consideration to this sector.

6.2 RESEARCH LIMITATIONS

Full range of longitudinal data of corporate sector of Pakistan is not readily available. Especially, market data of corporate debt is scarce therefore market vale based variables could not be included.

The analysis has been carried out in three articulated tiers. The second tier required analysis of annual data of individual industrial sectors. Small industrial sectors with relatively small no of companies like Transport, Electric Machinery, Petroleum and Mineral Products could not be

investigated separately due to small number of observations. Therefore industrial sectors with small no of companies were merged as miscellaneous.

The scope of research has been kept limited to non-financial sector. Financial sector has not been included in this investigation due to fundamental difference in nature of financial decisions and regulatory requirements.

6.3 FUTURE RESEARCH

Research can be extended to investigate what other factors including corporate governance, behavioral and financial factors impede the capital structure adjustment speed. The reason of difference in adjustment speed across firms is also a significant dimension of capital structure research. Research can also be further extended to explore that the convergence to target capital structure is a mechanical process or is the deliberate choice of the firms and what behavioral, economic and firm specific factors cause the deviation from the target capital structure.

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APPENDIX-I

DESCRIPTION OF ANNUAL DATA

The following three tables depict the annual mean values, median and standard deviation of the dependent and independent variables over the period of study. Highest Return on asset in the year 2004

Table A- Annaul Accounting Data Summary Statistics precious

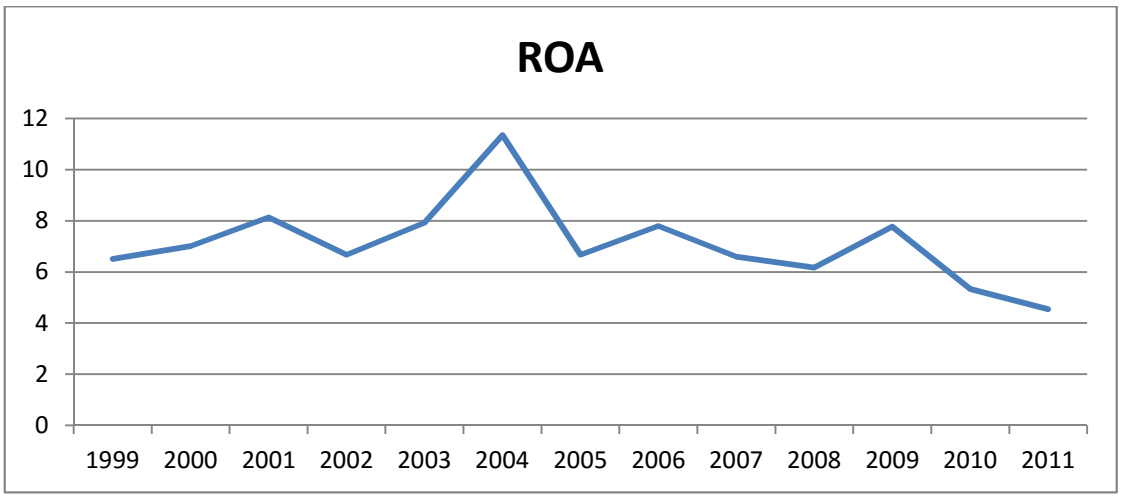
	SIZE			*ROA*			*CVA*			*FSIR*		
Year	*Mean*	*Med*	*S.D*	*Mean*	*Med*	*S.D*	*Mean*	*Med*	*S.D*	*Mean*	*Med*	*S.D*
1999	3.077	3.060	0.586	6.503	9.400	26.375	0.546	0.555	0.181	10.521	9.900	4.805
2000	3.104	3.038	0.585	7.003	7.100	26.496	0.588	0.595	0.176	9.828	9.900	5.382
2001	3.178	3.136	0.575	8.138	7.900	27.170	0.580	0.582	0.169	10.579	11.100	5.167
2002	3.128	3.045	0.581	6.671	8.500	35.236	0.573	0.579	0.189	9.831	9.900	5.374
2003	3.087	2.983	0.585	7.926	5.250	32.274	0.581	0.599	0.186	10.058	9.100	5.968
2004	3.098	3.068	0.605	11.342	7.500	29.049	0.569	0.579	0.177	10.312	9.900	5.235
2005	3.216	3.118	0.662	6.668	7.350	25.374	0.569	0.585	0.179	10.263	9.900	5.179
2006	3.036	2.978	0.573	7.795	5.800	26.652	0.565	0.571	0.181	10.992	11.100	5.384
2007	3.130	3.017	0.608	6.591	6.350	29.671	0.568	0.579	0.178	11.374	9.900	5.931
2008	3.127	3.085	0.547	6.170	5.600	30.955	0.518	0.512	0.169	10.445	9.900	5.205
2009	3.104	3.220	0.530	7.768	8.300	31.363	0.558	0.570	0.180	11.616	11.200	6.355
2010	3.110	3.351	0.570	5.330	6.125	30.577	0.540	0.557	0.177	12.340	10.496	5.920
2011	3.190	3.051	0.568	4.540	5.949	30.815	0.560	0.555	0.177	12.760	10.552	5.998

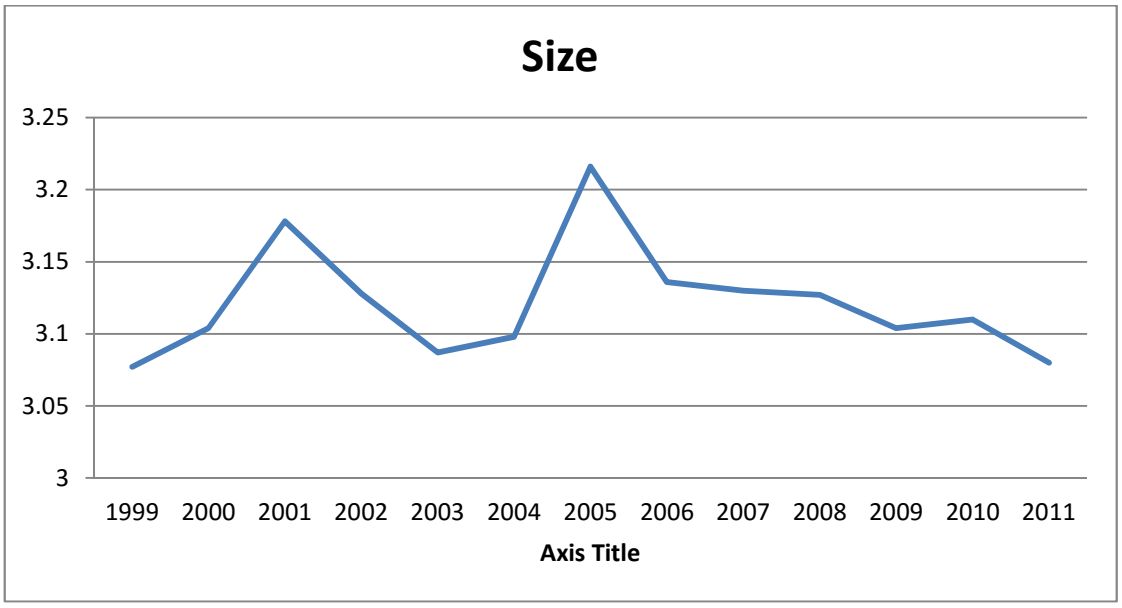
	GRTH			*NDTS*			*SPTF*			*STS*		
Year	*Mean*	*Med*	*S.D*	*Mean*	*Med*	*S.D*	*Mean*	*Med*	*S.D*	*Mean*	*Med*	*S.D*
1999	11.445	10.300	31.606	4.155	4.020	1.424	0.307	0.265	0.190	0.952	0.936	0.391
2000	10.944	9.600	32.528	4.225	3.993	1.623	0.292	0.251	0.175	0.892	0.911	0.371
2001	13.792	11.900	34.055	4.161	3.946	1.512	0.277	0.250	0.170	0.942	0.932	0.408
2002	7.581	7.200	37.710	4.110	3.899	1.629	0.305	0.272	0.183	0.919	0.905	0.430
2003	8.663	6.600	28.833	4.124	3.891	1.662	0.317	0.252	0.211	0.928	0.933	0.426
2004	14.527	10.000	35.101	4.222	3.999	1.651	0.304	0.278	0.181	0.925	0.894	0.400
2005	13.054	11.150	28.378	4.142	3.866	1.615	0.321	0.243	0.211	0.899	0.898	0.371
2006	11.461	6.800	36.594	4.202	3.944	1.632	0.323	0.272	0.200	0.889	0.875	0.403
2007	7.334	6.550	29.712	4.180	3.894	1.668	0.315	0.246	0.203	0.860	0.851	0.373
2008	11.414	7.850	33.656	3.895	3.822	1.445	0.319	0.270	0.199	0.982	1.004	0.370
2009	8.315	11.400	36.501	4.093	3.863	1.415	0.317	0.276	0.183	0.862	0.887	0.342
2010	9.630	8.279	33.876	4.560	3.836	1.320	0.310	0.267	0.190	0.780	0.900	0.410
2011	10.440	8.154	33.996	4.210	3.822	1.370	0.320	0.268	0.203	0.820	0.928	0.400

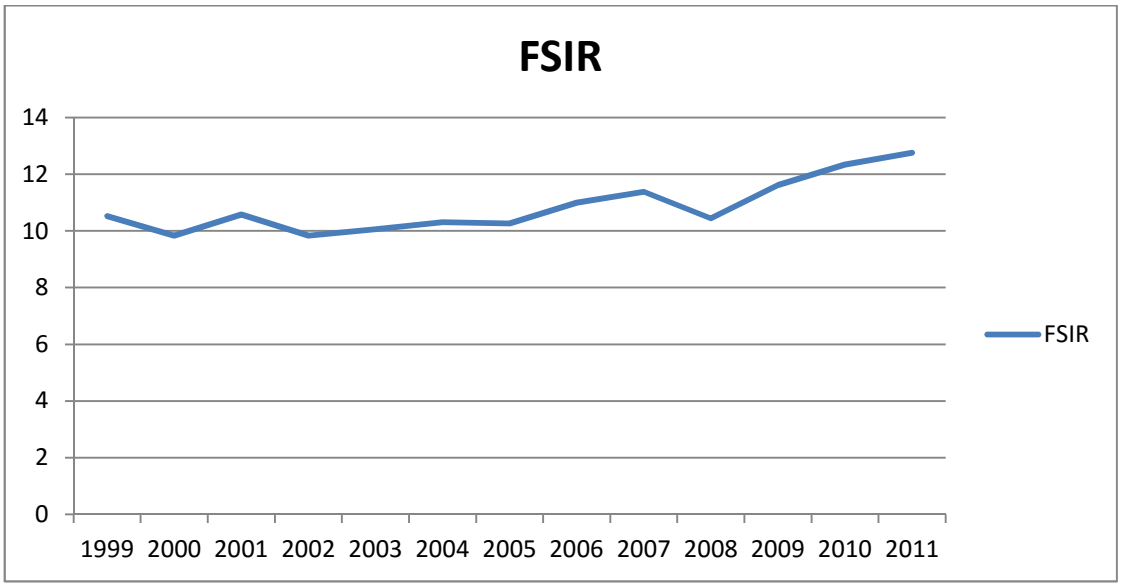
	CDA			*LDA*			TDA		
Year	*Mean*	*Med*	*S.D*	*Mean*	*Med*	*S.D*	*Mean*	*Med*	*S.D*
1999	0.228	0.013	0.174	0.183	0.175	0.123	0.670	0.013	0.695
2000	0.200	0.011	0.160	0.216	0.194	0.127	0.622	0.012	0.626
2001	0.362	0.014	0.386	0.201	0.189	0.120	0.618	0.012	0.621
2002	0.402	0.013	0.418	0.212	0.180	0.146	0.631	0.012	0.643
2003	0.397	0.014	0.405	0.201	0.172	0.137	0.632	0.013	0.662
2004	0.396	0.013	0.396	0.184	0.187	0.124	0.644	0.012	0.647
2005	0.416	0.013	0.420	0.200	0.190	0.123	0.641	0.012	0.672
2006	0.413	0.013	0.427	0.182	0.146	0.128	0.650	0.012	0.686
2007	0.372	0.012	0.378	0.193	0.130	0.130	0.656	0.012	0.679
2008	0.413	0.013	0.430	0.214	0.139	0.120	0.667	0.012	0.679
2009	0.395	0.014	0.417	0.166	0.132	0.122	0.674	0.012	0.703
2010	0.459	0.013	0.490	0.185	0.131	0.125	0.665	0.012	0.693
2011	0.475	0.013	0.511	0.184	0.125	0.124	0.669	0.012	0.698

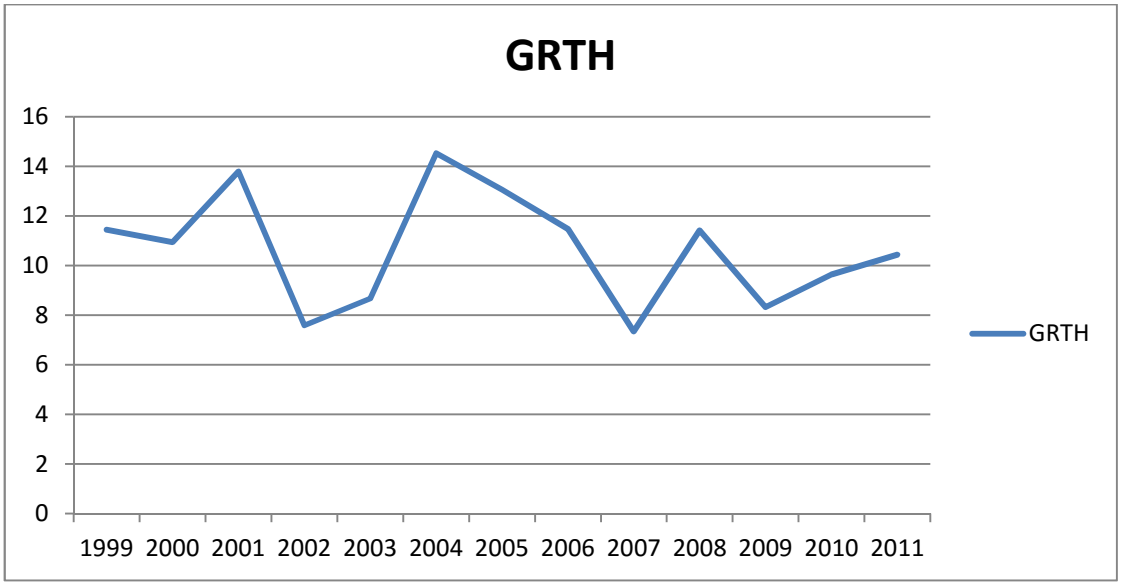
APPENDIX-II

Graphical presentation of historical values of the variables.






FSIR
14
12
10
8
6
4
2
0
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
FSIR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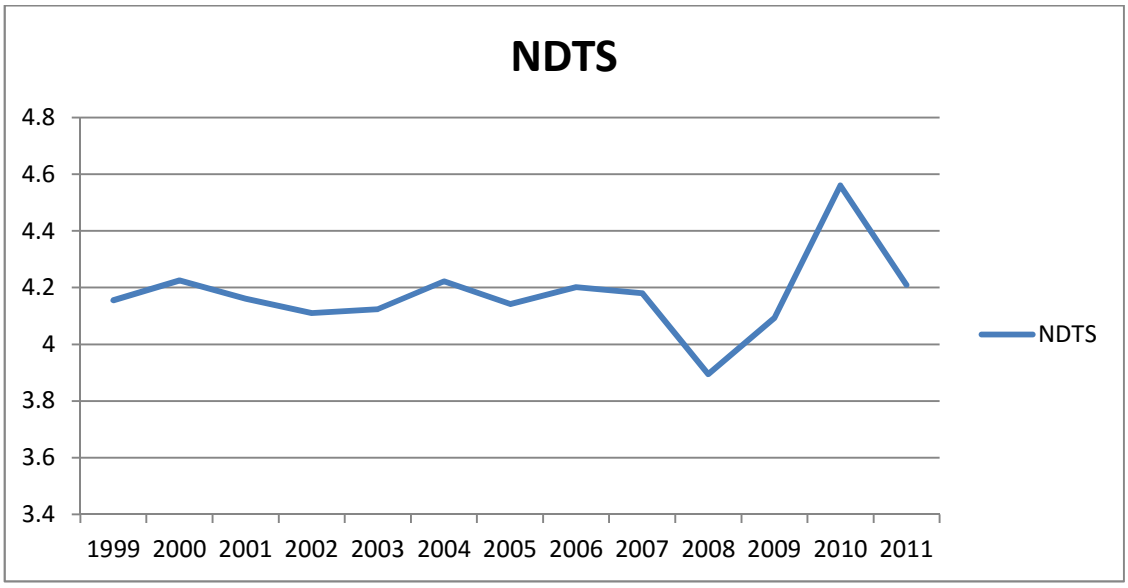
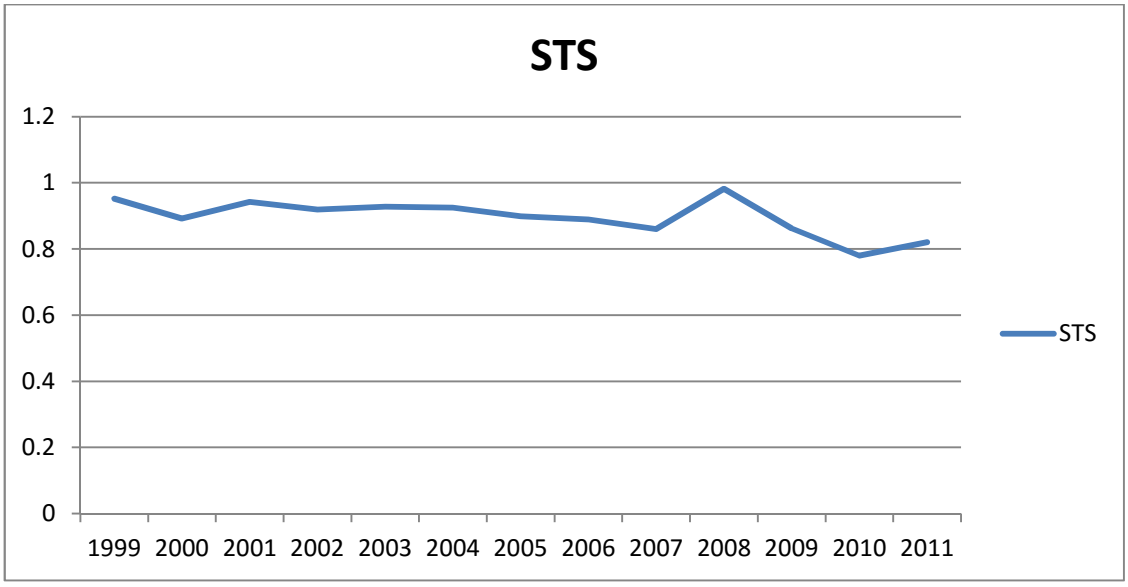
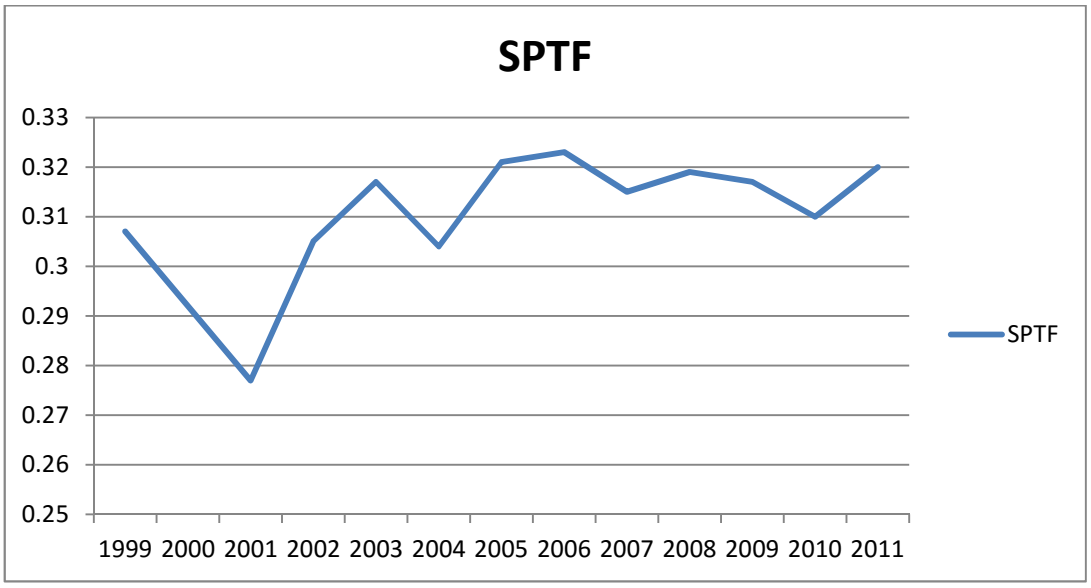
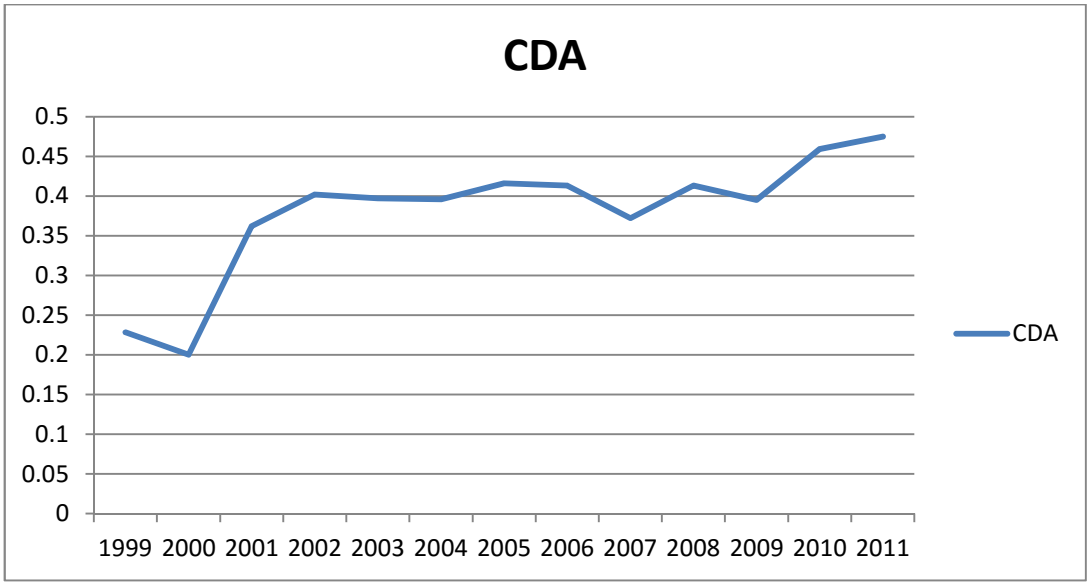
12
10
8
6
4
2
0
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
GRTH


NDTS
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
NDTS


STS
1.2
1
0.8
0.6
0.4
0.2
0
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
STS


SPTF
0.33
0.32
0.31
0.3
0.29
0.28
0.27
0.26
0.25
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
SPTF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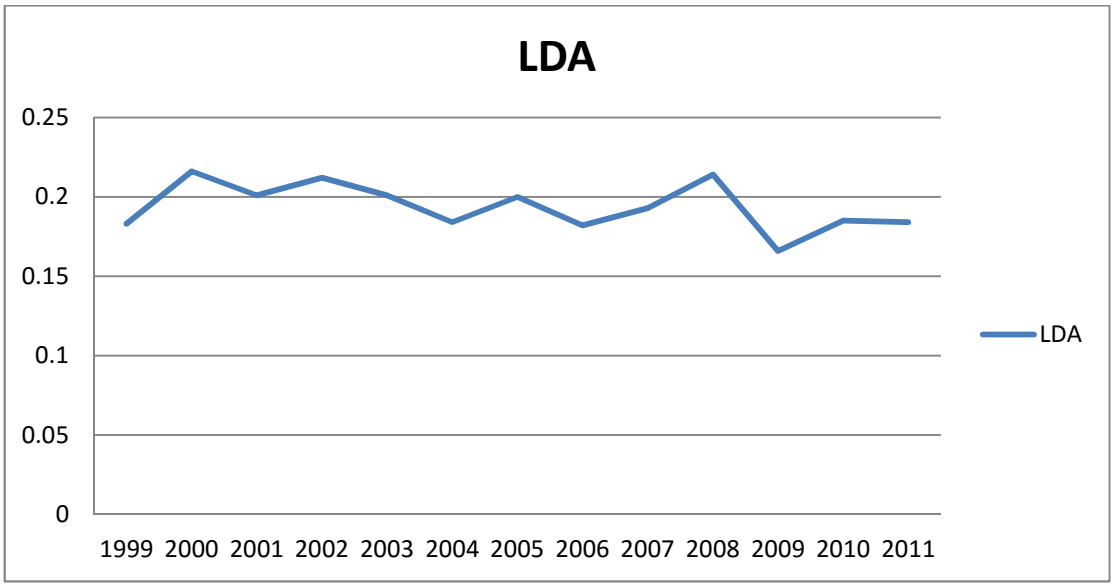
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
CDA


LDA
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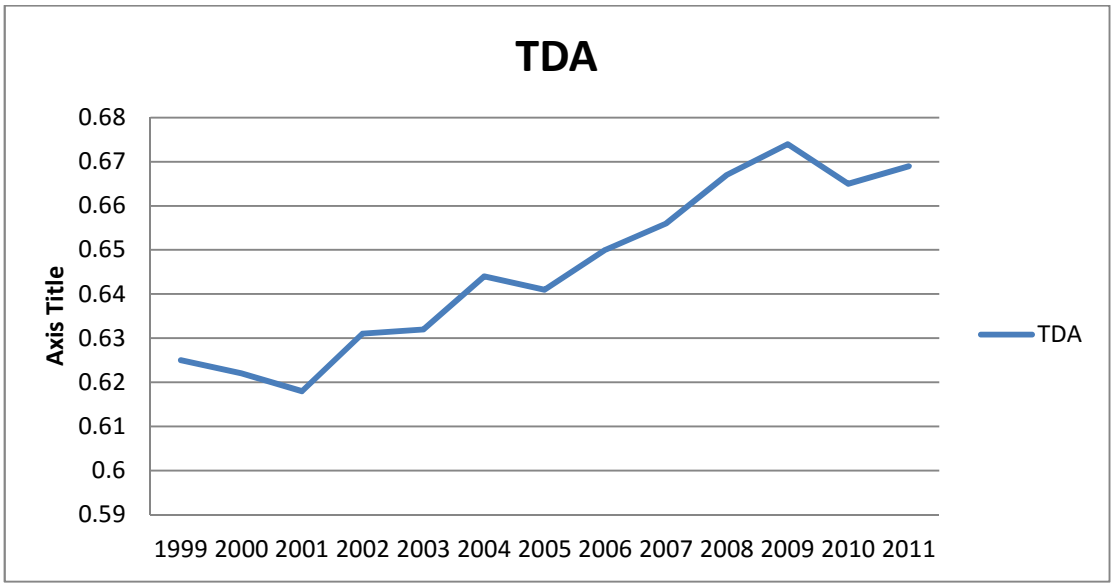
0.2
0.15
0.1
0.05
0
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
LDA


TDA
Axis Title
0.68
0.67
0.66
0.65
0.64
0.63
0.62
0.61
0.6
0.59
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
TDA

APPENDIX-III

Estimated values of annual adjustment speed of various industrial sectors.

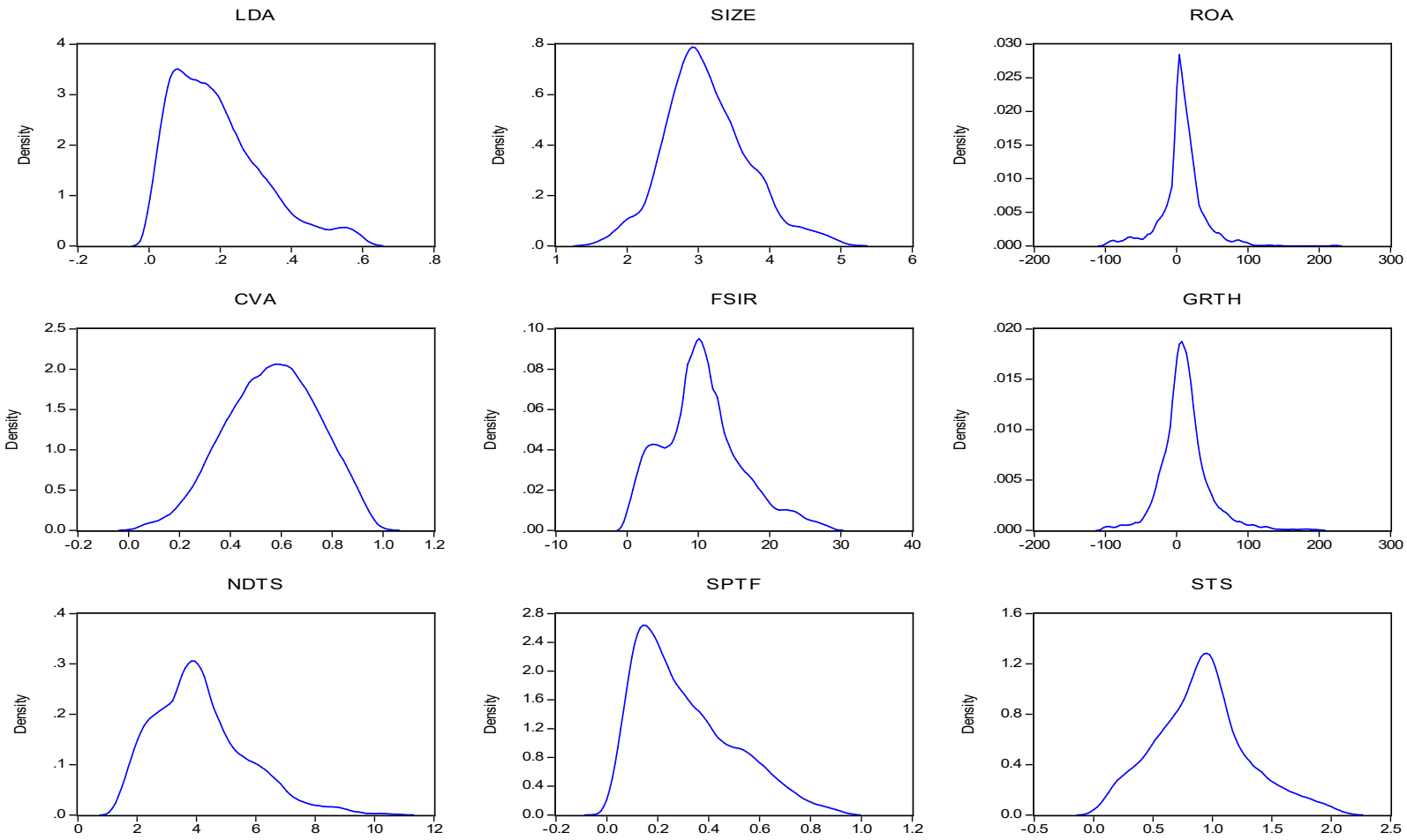
Sector	Year	*Coefficients*	*t Stat*
Cotton and Other Textiles	2000	-0.539364	-2.677213
	2001	-0.234017	-3.507233
	2002	-0.446172	-3.149488
	2003	-0.402321	-2.084991
	2004	-0.148535	-2.235803
	2005	-0.429056	-2.911583
	2006	-0.563724	-4.215506
	2007	-0.557869	-3.642150
	2008	-0.686870	-3.587684
	2009	-0.620471	-3.524266
	2010	-0.554779	-2.931088
	2011	-0.266457	-2.617889
Chemicals	2000	-0.234982	-2.543869
	2001	-0.185374	-3.939490
	2002	-0.217571	-2.634849
	2003	-0.378744	-3.338859
	2004	-0.289350	-3.936392
	2005	-0.494764	-3.992763
	2006	-0.486753	-2.156421
	2007	-0.268873	-3.938803
	2008	-0.183584	-2.619682
	2009	-0.151347	-2.552859
	2010	-0.679567	-3.063567
	2011	-0.294684	-2.861827
Sugar and Allied	2000	-0.328357	-4.241325
	2001	-0.126353	-1.840758
	2002	-0.063730	-1.974313
	2003	-0.130856	-2.714713
	2004	-0.161430	-2.566773
	2005	-0.120263	-1.654488
	2006	-0.288692	-2.303685
	2007	-0.409657	-2.697488
	2008	-0.138535	-1.180445
	2009	-0.172074	-1.558835
	2010	-0.117039	-1.088470
	2011	-0.250933	-2.695060
Engineering	2000	-0.491776	-2.608017
	2001	-0.158545	-2.972868
	2002	-0.098383	-1.794982
	2003	-0.294386	-2.231808
	2004	-0.288053	-2.160293
	2005	-0.244987	-3.140252
	2006	-0.325526	-2.320748
	2007	-0.188288	-2.489432

	2008	-0.235020	-2.047975
	2009	-0.215384	-3.221720
	2010	-0.382977	-1.921136
	2011	-0.488299	-2.438102
Others	2000	0.342456	-2.625380
	2001	0.453234	-2.867365
	2002	0.364657	-3.824536
	2003	0.445621	-1.981735
	2004	0.456313	-2.388791
	2005	0.372355	-3.109874
	2006	0.327563	-2.581764
	2007	0.413627	-2.478175
	2008	0.546272	-2.234410
	2009	0.346374	-2.988264
	2010	0.382562	-4.298746
	2011	0.325229	-3.229874

Source: Author's own calculation

APPENDIX-IV

The following graphs show the Kernel Density of the individual variables. The graphs depicts that none of the variable has serious distribution problem. Almost all the variables are normally distributed. Normal distribution is one of most basic assumption of the regression. Spontaneous finance and Long term Debt to Asset is little skewed to the right tail of the distribution hence within the acceptable range.


LDA
SIZE
ROA
CVA
FSIR
GRTH
NDTS
SPTF
STS
Density